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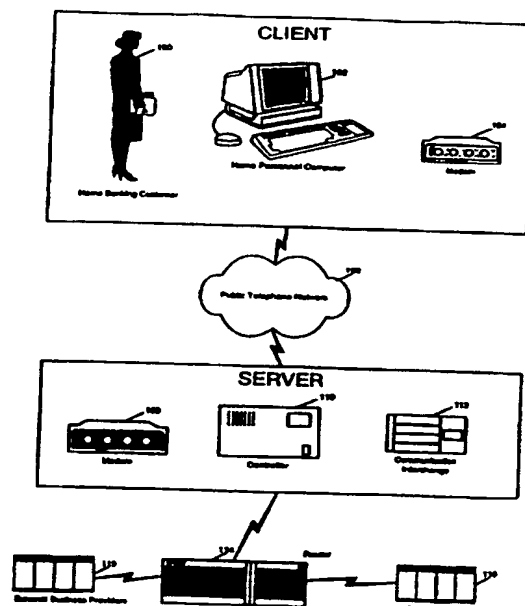
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(54) Title: AN IMPROVED METHOD AND SYSTEM FOR PERFORMING BANKING TRANSACTIONS, INCLUDING HOME BANKING

(57) Abstract

The Home Services Delivery System will provide multi-function financial services to a user accessible through a Personal Computer System. The Home Services Delivery System is based on a Client-Server architecture and is designed to run under the Microsoft Windows environment. The Home Services Delivery System Client (Client) is a software program provided to the user that runs on the user's PC and accesses a Home Services Delivery System Server via a dial-up line. The Client supports local functions such as installation and configuration, and once on-line, displays screens sent from the Home Services Delivery System Server that handles user input to those screens. The Client infrastructure software provides the basic functions needed to connect to the Server, provides information to authenticate the user, and maintains the connection until the user concludes it. The Client infrastructure software also provides basic help screens on how to configure the software. The Client Software incorporates a Graphical User Interface, which provides a user-friendly method of interaction with the System for the user at their personal computer. This interface allows for the design of a global "look and feel" for consistency of interaction between the user and the underlying Systems, either through the use of this invention at home or through other Systems such as a "customer activated terminal" (CAT) or ATM at a kiosk or bank branch. This global "look and feel" can also provide consistency of interaction when a user travels to other countries and accesses the System. The System can be configured by users for use with a preferred language during the installation and configuration of the Client Software. In subsequent sessions, the user will interface with the System using that preferred language. A Home Services Delivery System Server is the collection of one or more computers that connects Home Services Delivery System Clients to the business host and to other external service providers. The Home Services Delivery System Server executes both infrastructure as well as business or region-specific application software on SUN systems hardware. The Server supports encryption key downloading, personal identification number (PIN) unscrambling and PIN encryption. Security is instituted at the hardware level. Services provided include Account Information, Transfer, Customer Service, Payment, Payee List, Direct Debit, Mutual Funds, and transfers of funds between different accounts. The Server configuration allows for subsequent addition of applications to the System as they are developed for future expansion to support new functions.



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**AN IMPROVED METHOD AND SYSTEM
FOR PERFORMING BANKING
TRANSACTIONS, INCLUDING HOME BANKING**

5 BACKGROUND

As the information revolution has introduced an increasing number of methods and mechanisms for accessing and manipulating data, many industries, particularly the banking industry, have attempted to incorporate these methods and mechanisms to improve the services provided to their users. As a result, the world has witnessed the appearance of automated teller machines (ATMs) on many street corners, telephone access to account information and limited access to banking services via home computer. As the capabilities of modern computers expand together with increasingly sophisticated forms of data transmission, such as high speed modems, satellite links and cellular communication, the demand for more sophisticated remote banking services has also increased. Similarly, as international boundaries have become more permeable to the flow of people and information, there is rising demand for remote banking services to cross international boundaries as well. Thus, it would be desirable provide a range of services previously available only at traditional points of service, e.g., bank offices, branches, ATMs, to non-traditional locations, e.g., personal computers (PCs), personal data assistants (PDAs), telephones with displays (screen phones), etc., and further to make access to these services available on an international basis. In order to provide a truly international banking system that can be accessed at both traditional and non-traditional points of service, three hurdles must be overcome. First, secure and reliable communication enabling systems must be provided. For instance, computer "hackers" regularly compromise even the most sophisticated computer networks. Thus it would be desirable for a remote banking system to include security measures, such as security codes and encryption. This is especially true where the system is intended to be accessed over unsecured telephone lines.

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Also, a system for banking from remote terminals may require data transmissions over standard telephone lines. These data transmissions -- in which machines are talking to machines -- optimally require a great deal of information to be transmitted. However, standard telephone lines have a limited bandwidth, which
5 limits the amount of data that can be transmitted in a given period of time. As a result, the time required to perform a given transaction can be quite long. Thus, it is desirable to transmit the data over a very short period of time in order to reduce session time and therefore time commitment by the user. Also, the expenses of the telephone cell and the system time committed to the transaction are minimized.

10 Accordingly, there is a need to compress the data so as to minimize the time required for data transmission.

Furthermore, telephone lines can be quite "noisy", that is, signals from other lines, equipment errors or electromagnetic interference can introduce anomalous signals into the machine-to-machine data transmissions. If the noise is sufficiently
15 disturbing, the data transmitted may be compromised. In such instances the remote terminal may not detect that an error has occurred. Instead, the home terminal may simply display the incorrect transmission which may well be an unintelligible "garble" of characters appearing on the terminal display. This results in wasted time and may negatively impact the user's confidence in the system, which is particularly
20 important in view of the sensitive nature of the transaction. Thus, it would be desirable to provide a system which can detect that an error in data transmission has occurred, identify the portion of the data transmission which is incorrect, and re-transmit the correct data.

Second, the idiosyncrasies of each individual system user must be
25 accommodated. For example, many users move or travel frequently. Thus, it would be desirable to provide each user with a consistent interface format so that each change in location will not require the user to relearn the banking system under a different interface format. Furthermore, banking transactions may take place in many different languages. Because a financial institution, such as a bank, may have
30 locations in a number of different countries and cultures, the remote banking system

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of the financial institution must be accessible to users in a number of different languages. If separate products must be created for each language, the financial institution is required to create and stock different software disks for different countries. Further, a user resident in a country which predominantly speaks one language may nonetheless wish to interact with the system in a different, second language -- particularly if the second, different language is the individual's native language. Also, differences in languages arise, not only from country to country, but within countries, cities and even households. Accordingly, there is a need for a system which can communicate in any number of languages without creating the problem and distributing different products, each specific to a different language.

Third, an international remote banking system will necessary rely on many service providers in many different countries which must be linked together. As a result, there is a danger that differences will arise in a given product between different locations, i.e., the products will "diverge." Product divergence causes a system to be prone to "bugs," which can interrupt service and cause lapses in security, allowing theft or compromise of data and assets. Similarly, product divergence may result in the "projected" product, i.e., the product received and viewed by the user, appearing differently in different locations. This will tend to disorient the user and undermine confidence in the system. Accordingly, it would be desirable to have a central location for the primary business applications so that the configuration of each application can be managed, the product projection held static and product divergence limited.

Nonetheless, certain service providers may require or desire additional, regional applications to be made available. These may result from regional legal requirements or financial products available only in that region. Thus, there is a need to allow local applications to "piggyback" on the system so that specialized services offered at specific locations may be maintained.

Also, in systems where the gateway for communications between the remote terminal and the host differ from country-to-country, different software and products must be created for each country. Accordingly, there is a need for a uniform

connection between remote terminals, computers, from different countries to a standard international host.

SUMMARY OF INVENTION

5 The present invention provides an improved system and method for providing remote banking transactions, including home banking, which resolves the problems associated with provision of such services remotely and in an international environment. The improved system, referred to as the Global Delivery System comprises four elements: the User Software, the Server, the Router and the Service
10 Provider. The User Software resides at the point of service, such as the user's personal computer, the bank branch or an ATM. The User Software communicates directly with the Server. The Server processes the incoming transaction with a set of resident business applications and directs the transaction to the Router, also referred to as the SFC Gateway. The SFC Gateway generally directs the transaction to the
15 appropriate Service Provider, or, in certain situations, may itself authorize the transaction. The Service Provider may be the business host, e.g., the user's home institution, or may be an external Service Provider, such as a credit card company or a utility provider.

20 The User Software is a software program provided to the user for installation on the user's personal computer (PC). The User Software provides the basic functions needed to connect to the server, such as, information to authenticate the user and encrypt data transmissions; maintenance of the connection to the Server during the session; and help screens to assist the user. The User Software employs a modular architecture in which a main application invokes standard components, but may also
25 incorporate local application content. The User Software uses a graphical user interface which is consistent with the interface used at other point of service locations, such as a customer activated terminal (CAT) at a bank branch, ATM or kiosk any place in the world. The User Software also allows the user to customize the configuration of the interface to a preferred language and dialing options.

30 The Server is a collection of one or more computers that connect the User

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Software to the Service Providers. The Server executes infrastructure and business or non-region specific application software. The infrastructure components include: 1) an Assembler/Disassembler for providing communications protocol between the User Software and the Server; 2) a Session Controller for supporting initiation, 5 identification and termination of User software/Server sessions; 3) a CAT Terminal Protocol Interface (CAT-TPI), which supports the establishment and maintenance of the communications between the User Software and the applications, including protocol translation, message flow control, encryption and decryption and other User Software specific services; 4) a Terminal Application Front End (TAFE) which 10 executes the business applications; 5) a CAT Session Manager (CAT-SM) which essentially oversees the session, enforcing business rules, authenticating the User Software and providing security and other process controls; and 6) a CAT Common Integrator (CAT-CI) formats messages as appropriate for different Service Providers. Other elements of the Server include the Activity Log Server which generates 15 transaction logs, a Session Encryption Server which supports encryption and other security measures, and the Host Message and X.25 Normalizers which handle translation and protocol management tasks. The CAT-TPI, TAFE and CAT-SM remain active at all times to manage and "clean up" the system during and after each session.

20 The Business Applications are also resident on the Server. This helps ensure that security can be effectively managed by isolating the primary tools used by the user software in a single location. Furthermore, system upgrades and configuration management are simplified. Likewise, maintaining a unified projection to a variety of users is also possible. Numerous individual business applications reside on the Server 25 in modular format, allowing the addition or subtraction of applications as desired. The SFC Gateway, which provides the link between the Server and the Service Providers, may, but need not, be integrated into the Server.

Use of the system begins when the user installs the User Software on a personal computer. The software is installed on the computer's hard drive and various 30 options are selected to configure the User software. For instance, the user can select a

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preferred language, bank call-up protocols, call-waiting disable, etc. The User Software can be reconfigured at will, should the need arise. The user then connects to the Server via a modem and inputs identifying information, such as a bank number and a security code to initiate the session.

5 Once the User Software connects to the Server, the Server contacts the Service Provider or Host and verifies the security measures. If the security measures are satisfied, a link joining the User Software, the Server and the Host is established. Once the link is established, marketing messages may be delivered from the Host to the User Software. Thereafter, the user can select from a variety of applications which
10 allow the user to conduct business transactions, such as, paying bills; purchasing or selling investments, including mutual funds; reviewing information about potential investments; retrieving account information, including information regarding the user's securities portfolio; preparing transaction journals; transferring money between accounts; and obtaining user services, such as ordering new checks. Included
15 throughout many of the transactions is the need to re-input the user's personal identification number (PIN). This provides additional security and verifies authorization of each transaction.

 The need for improved security is realized in the present invention through the use of hardware located in the Server to perform encryption between the Server and
20 the Service Provider. The device will no longer function if a third party improperly tries to access it. Thus, computer "hackers" and the like have a more difficult time when attempting to tamper with the system because security system is maintained in a secured hardware device which is tamper-proof, and in a single location.

 The improved system contains data compression and error correction.
25 Specifically, in the system the data flow is compressed in order to minimize the amount of time required to perform a transaction, thereby minimizing the equipment time committed for a transaction. Further, the improved system has an improved error detection system for detecting that an error has occurred in the transmission of data over the telephone line. The remote terminal, which typically has been a "dumb"
30 terminal, is transformed by the User software into an "intelligent" terminal, which

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may detect, for example, that an error has occurred with regard to an incoming message. In such instances the "intelligent" terminal will not display the incorrect message but will rather work with the host computer to obtain and then display the correct data. Thus, the instance of unintelligible garbled messages being displayed upon the user's screen is minimized. This improvement minimizes the amount of time committed to re-transmitting data and thereby improves the overall efficiency of the transaction.

The improved system responds to the need for multi-lingual capabilities by enabling each user, during the User software configuration process, to select the language the user would like to use. Thereafter, that language appears on the screen of the terminal, for all communications. The improved system is sufficiently versatile to permit different users in the same household to use different languages when each accesses the terminal. Furthermore, the User software acts to translate the users commands into a standard protocol, thus eliminating the need for the Server to accept or provide for multiple languages.

The improved system incorporates standard connections between the terminals, such as home personal computers, and the host computer. Thus, regardless of the country in which the user resides, the user will be able to access the host computer through the standard gateway. This, in turn, means that the financial institution will not need to generate a different product for each country but rather may prepare and distribute one product for all its users worldwide. The standard gateway involves a standard front-end processor between a host computer and the terminal. The use of this standard front-end processor permits any terminal to communicate with any of the host computers of the financial institution worldwide.

Accordingly, it is an object of the present invention is to provide an apparatus and method for performing banking transactions which makes these transactions available at both traditional and non-traditional points of services, including banks, ATMs, PCs and PDAs.

Another object of the present invention is to provide an apparatus and method for performing banking transactions which is secure from intervention by unauthorized parties.

5 Another object of the present invention is to provide an apparatus and method for performing banking transactions which provides data compression to minimize communication time.

Another object of the present invention is to provide an apparatus and method for performing banking transactions which performs error detection and correction thereby avoiding anomalous or erroneous data displays.

10 Another object of the present invention is to provide an apparatus and method for performing banking transactions which uses a centralized server system on which the core business applications reside, thereby assuring consistent configuration projection to the user.

15 Another object of the present invention is to provide an apparatus and method for performing banking transactions which can accommodate business applications that are provided by specific service providers, where such applications are routed through a central server and system protocols are maintained.

20 Another object of the present invention is to provide an apparatus and method for performing banking transactions which can provide services in a plurality of languages in any region where such services are available.

Another object of the present invention is to provide an apparatus and method for performing banking transactions which utilizes a standard interface used in all markets where such services are available.

25 Another object of the present invention is to provide an apparatus and method for performing banking transactions which utilizes an interface that can be configured with information specific to each user.

Other objects, features, and advantages of the present invention will become apparent with reference to the remainder of the written portion and the drawings of this application.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is an overview block diagram of the integrated components and communication links which comprises this home delivery System for financial services.

5 FIG. 2 is an overview block diagram of the financial institution's server components.

FIGS. 3A-3D contain four screen shots representing examples of the graphic user interface (GUI) for the home delivery System for financial services.

FIG. 3A is the opening greeting screen.

10 FIG. 3B is the screen for entering the customer's identification number.

FIG. 3C is the screen for entering the name of the recipient.

FIG. 3D is the screen used to enter the recipient's branch.

FIG. 4 is a flow diagram for installation of home financial software to be stationed at the customer home personal computer (PC).

15 FIG. 5 is a flow diagram outlining the configuration of the home banking software. It allows the customer to configure the installed software to specific languages and modem types.

FIG. 6 is a continuation of FIG. 5 including more specific configuration for the modem.

20 FIG. 7 diagrams the flow process which allows the user to start a subsequent configuration. It allows the customer to re-configure previously loaded software specific to the user.

FIG. 8 is the hookup method between the client (customer) personal computer (PC) to the bank server.

25 FIG. 9 diagrams the process flow for downloading the marketing message table which is initiated by the host and downloaded to the home banking server to be displayed on the customer PC.

FIG. 10 is a continuation from FIG. 9.

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FIG. 11 diagrams the process flow for accessing the customer payee list. The payee list provides the customer at home to have a list to make payments to on a regular basis.

FIG. 12 is a continuation from FIG. 11.

5 FIG. 13 diagrams the process flow for accessing the direct debit list. It allows the user to maintain, add or remove identities from the list.

FIG. 14 is a continuation from FIG. 13.

FIG. 15 diagrams the process flow for initially accessing the mutual fund application. This application allows the customer at home to buy and sell mutual funds utilizing their bank accounts.

10 FIG. 16 diagrams the process flow for performing a transaction to sell mutual funds.

FIG. 17 is a continuation from FIG. 15 and 16.

15 FIG. 18 is a continuation from FIG. 15 and allows the customer to select a mutual fund to buy.

FIG. 19 is a continuation from FIGS. 15 and 16 and allows the customer to start to review a mutual fund.

FIG. 20 is a continuation from FIGS. 15 and 16 and allows the customer to start the transaction account.

20 FIG. 21 is a continuation from FIGS. 15 and 16 and allows the customer to place the mutual fund order.

FIG. 22 is a continuation from FIGS. 15 and 16 and allows the customer to check the response to a mutual fund buy or sell.

FIG. 23 is a continuation from FIG. 16 and starts the mutual fund sell.

25 FIG. 24 diagrams the process flow for initially accessing the account information application. This application allows the customer at home to see balances or view historical transactions on accounts linked to a card. This figure specifically details the processes to send summary message.

FIG. 25 is a continuation from FIG. 24 detailing send summary message for account information.

FIG. 26 is a continuation from FIG. 25 and includes details to send a balance inquiry and to display balances.

FIG. 27 is a continuation from FIG. 26 .

5 FIG. 28 is a continuation from FIG. 27 detailing the processes involved for obtaining account information for securities.

FIG. 29 is a continuation from FIG. 28.

FIG. 30 diagrams the flow for account information when the customer requires additional information.

10 FIG. 31 is a continuation from FIG. 30 and diagrams the flow for account information pertaining to information obtained in transaction journals.

FIG. 32 is a continuation from FIGS. 28 and 31.

FIG. 33 is a continuation from FIG. 32.

15 FIG. 34 diagrams the process flow to re-enter personal identification number (PIN) as part of the Common Routine procedures. The processes identified can be initiated from different applications in the home banking modules.

FIG. 35 diagrams the process flow to check a profile response as part of the Common Routine procedures. The processes identified can be initiated from different applications in the home banking modules.

20 FIG. 36 diagrams the process flows of several small applications for checking response, and proceed with transaction processing accordingly, and for home processing.

FIG. 37 diagrams the process flow to retry a bad personal identification number as part of the Common Routine procedures. The processes identified can be initiated from different applications in the home banking modules.

25 FIG. 38 diagrams the process flow for standard errors as part of the Common Routine procedures. The diagram describes the flow based on different action codes (AC). The processes identified can be initiated from different applications in the home banking modules.

FIG. 39 diagrams the process flow for account resolver as part of the Common Routine procedures. It assists the customer to select a particular account if there are two or more accounts of the same product type.

5 FIG. 40 diagrams the process flow for account selection as part of the Common Routine procedures. It allows the customer to select product types and product groups from their home PC. The processes identified can be initiated from different applications in the home banking modules.

10 FIG. 41 diagrams the process flow for determining account or transfer currency amounts as part of the Common Routine procedures. The processes identified can be initiated from different applications in the home banking modules.

FIG. 42 diagrams the process flow for the overall procedures in the product select session.

15 FIG. 43 diagrams the process flow for the overall procedures in obtaining customer account information. The information may include sub-accounts and multiple accounts for a single customer.

FIG. 44 diagrams the process flow for the overall procedures to transferring assets from a source account to a destination account.

20 FIG. 45 diagrams the process flow for the overall procedures of customer service processing. The customer service processing contains five sessions. Two sessions, re-order checks and change PIN number are described in this figure.

FIG. 46 is a continuation of FIG. 45 and describes the three remaining customer service sessions. These sessions process and update request transactions, give notice transactions or print balance summary transactions.

25 FIG. 47 diagrams the process flow for the overall procedures for payment processing. Allows the customer to create a payment, change a payment, cancel a payment, and inquire on a payment.

DETAILED DESCRIPTION

The home services delivery System is symbolically diagrammed in FIG. 1. A home banking customer 100 logs onto their IBM PC or IBM compatible personal computer 102 and selects the home banking program group with the appropriate icons. The customer accesses the bank server by selecting the icon that creates a link via the customers modem 104 using the public telephone network (x25) 106. The server contains a set of modems 108, linked to controllers 110 and communication interchanges 112. The communication interchange allows communication between the server and the small financial System and router 114 that link a network of external business providers 118, or business hosts 116.

The Home Services Delivery System Client (FIG. 2) is a software program provided to the user that runs on the user's PC and accesses a Home Services Delivery System Server via a dial-up line. The Client supports local functions such as configuration, and, once on-line, displays screens sent to it from the Home Services Delivery System Server and handles user input to those screens. The Client infrastructure software provides the basic functions needed to connect to the Server, provide information to authenticate the user, and maintain the connection until the user concludes it. The Client infrastructure software also provides help screens on how to configure the software.

The Home Services Delivery System Client software supports the functions of setup, communication with the Home Services Delivery System Server, and terminal emulation in a standard reusable way, while at the same time allowing a customizable look and incorporation of local application content. It provides a modular Client architecture, in which a main application can invoke the standard components, but also be able to incorporate the local content.

As illustrated in FIG. 2, the Home Services Delivery System Client software consists of the Home Services Delivery System Client Windows Runtime Application 150; the Installation Program 151; the Configuration Program 152; and the Help Function Utility 153.

To provide a modular architecture, the Home Services Delivery System Client Runtime Application 150 includes the Main Menu Window, the Terminal Emulator, Dial-up communication modules, and modules providing functionality of security and printing.

5 The Main Menu Window provides the virtual bank screen for invoking the Home Banking application. It allows the user perform multiple functions, including changing configuration and to dial-up/hang-up to Server.

10 The Terminal Emulator is a standard Windows application. It contains an on-line application screen which provides the presentation space for the user to access the remote banking service. It is displayed to the user only when a connection has been established with Home Services Delivery System Server. It receives the application screens from the Server, accepts the user input, and builds the user input into a request message to send to the Server. It also provides the connection progress report to user during dialing up to the Server.

15 The Home Services Delivery System Client dial-up communication module (COM) uses the modem to dial-up the remote Server, starts sliding window protocol (SWP) to communicate with the Server, and passes data/messages between the Server and other components in the Client.

20 The Security Module (SEC) provides the functions required by the Home Services Delivery System runtime application to encrypt the customer's confidential information before sending it to the Home Services Delivery System Server over the public telephone network.

25 The Installation Program 151 creates a directory structure for installing software; copies the software from the installation diskette to the hard disk in the user's PC; creates the program and icons; creates and installs any initialization files as necessary; and installs required operating resources, such as fonts used by the Home Services Delivery System Client runtime application.

30 The Configuration Program 152 configures the required parameters, such as the phone number of remote Server, the modem type, for the Home Services Delivery System Client application.

The Help Function Utility 153 provides the help information invoked by a standard help utility to assist the user with configuring and running the Home Services Delivery System Client application.

5 The Client System is furnished with software which incorporates a Graphical User Interface (FIGS. 3A-3D), which provides a user-friendly method of interaction with the System for the customer at their personal computer under the Microsoft Windows environment. This interface allows for the design of a global "look and feel" for consistency of interaction between the customer and the underlying Systems, either through the use of this invention at home or through other Systems such as a
10 "customer activated terminal" (CAT) at a kiosk or bank branch. This global "look and feel" can also provide consistency of interaction when a customer travels to other countries and accesses the System. Items 190, 192, 194, 196 illustrate the GUI and are examples of screens with which the customer will interact.

15 The System follows a consistent navigation flow through the System which incorporates multiples of features. Customer session screens have a "HOME" button 194 and 196 which returns the user to the main menu. An "EXIT" button is provided on the main menu screen which allows the user to exit the System. Some screens will also incorporate a "BACK" button which takes the user to a previous menu or sub-menu.

20 The System allows users to select their language if choice during installation and configuration of the Client software. Thereafter, the customer will interface with the System using that pre-configured language. FIG. 4 illustrates the installation and FIG. 5 through FIG. 7 illustrate the configuration process for the Client software.

25 The Home Services Delivery System Server (FIG. 2) is the collection of one or more computers that connect Home Services Delivery System Clients to the business host and to other external service providers. The Home Services Delivery System Server executes both infrastructure as well as business- or region-specific application software.

30 The application software is confined to the Server in order to ensure that the application runs in a secure environment; make it possible to upgrade the applications

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at a central location without having to distribute new software to all users; and make it possible to ultimately project a single application to a variety of Client machines.

The components of the Home Services Delivery System Server integrated to support home banking applications include the Home Services Packet

5 Assembler/Disassembler (HSPAD) 160 ; Session Controller (SC) 162; CAT Terminal Protocol Interface (CAT-TPI) 164; Terminal Application Front-End (TAFE) 166; CAT Session Manager (CAT-SM) 168; CAT Common Integrator (CAT-CI) 170; Business Applications 172; Activity Log Server (ALS) 174; Secure Encryption Server (SES) 176; Host Message Normalizer (HMN) 178; Small Financial CAT Gateway
10 (SF/SFC) 180; and the X.25 Normalizer (X25.-NI) 182.

The Home Services Packet Assembler/Disassembler 160 serves as a communication protocol between the Client and the Server HAL link-level protocol. The Session Controller (SC) 162 functions includes support for a mechanism to start up a configurable number of static triplets based on the type of Client they must
15 service, support for a set of executable arguments that are unique to the trio of processes associated with each home banking session, support for a pool of Terminal IDs that have been assigned to the Server by the business, and support for exchanging session-initiation (SI) and session-termination (ST) messages with the CAT-SM.

The Terminal Interface 164 is the software in direct contact with the
20 application, whether it is running in a terminal or on the Host. It provides services to establish and maintains the link level connection with terminals, translates between protocols, manages the link level message flow control, generates the encryption key, encrypts/decrypts, and performs special services as required by individual interfaces.

The Terminal Application Front-End (TAFE) 166 serves as the run-time
25 interpreter that executes business applications on the Server and provides a set of API's used by the interpreter to perform System functions.

The CAT-SM session manager 168 is the intelligence of the session, representing the interests of the business, and communicating with both the Terminal
Interface and the Integrator. Its functional responsibilities include enforcing the
30 business rules of the interface, verifying the customer identity and enforcing security

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safeguards, establishing and maintaining the session context, monitoring and enhancing messages, providing flow control for list processing between Home Services Delivery System and the application and managing the activity log recording.

5 The CAT-CI common integrator 170 applies message level rules required to format messages correctly to talk with different business Hosts.

The Activity Log Server (ALS) 174 provides support for CAT application-generated transaction logs. Existing transaction logs are written to disk files.

10 The message-level interface to the ALS supports a unique transaction type (e.g., function code) for log each type (home banking application or System-generated).

The Session Encryption Server (SES) 176 supports encryption key downloading, PIN unscrambling and PIN encryption.

15 The SFC Gateway 180 serves as a link level protocol converter. It has an external interface to a "Small Financial Services" (SFS) Host and internal interface to an MCS "Common Integrator" (CI) process in support of application messages. It also has an internal interface to the MCS Local Network Control Facility (LNCF) to support network control of the gateway. Application message level text is transparent to the SFC Gateway.

20 The SFC Gateway is used to transfer application messages between MCS entities and the external Host 184. Financial application messages are transferred between CAT applications and the external Host. Network control application messages are transferred between the Host and a node resident LNCF.

The SFC Gateway is bi-directional allowing request messages to be initiated by either the external or internal side.

25 The X.25 Normalizer (X25.-NI) 182 serves to keep the gateway independent of the link-level protocol.

CAT sessions will be "pre-started" at System initialization time—thus the trio of processes (CAT-TPI, TAFE, CAT-SM) that service a CAT session are considered static—that is, they are started before the Client attempts to connect to the System.

30 The pre-start is necessary for optional performance.

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The trio of processes (i.e., triplet—CAT-TPI, TAFE, CAT-SM) that service each session remain active until the System is reinitialized (rebooted). At the end of a session, the triplets take the necessary steps to “clean up” the current session—reinitializing session state and data context in preparation for servicing another Client.

5 A session is typically terminated in one of three ways:

Application initiated. For example, the customer presses the exit button on an application screen.

Client initiated. For example, the disconnect packet is sent at the link level (this occurs when the customer selects exit from a local menu).

10 CAT-TPI initiated. For example, the line is dropped or some other communication error occurs.

If one of the triplets fails due to a fatal error (e.g., memory allocation), the entire group will be restarted by the Server Controller.

The Server configuration allows for the subsequent addition of applications to the System as they are developed for future expansion to support new functions. FIG. 2 shows the business applications structure 172 of the Server, where new applications will reside. During the installation of the Server components, partition is created. This partition is used to house application software releases. For each application type, there is a base directory (for example, home banking). The base directory contains two sub-directories, which hold the primary and secondary software releases. The target structure within these directories can vary depending on the application type. All applications are table-driven, and as new applications are added, the appropriate new tables are downloaded to provide the mechanism for the new applications to be invoked.

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The Home Services Delivery System diagrammed in FIG. 1 is symbolically flow charted beginning in FIG. 4 at 200. The customer begins with the installation process on the home computer. The installation process will assist in the process of providing the home computer with configuration programs, help function utility, and home banking runtime applications. The installation starts by installing disk #1 and

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selecting setup from the A drive that begins the initialization process. The customer visually sees a splash screen on the monitor 202 introducing the customer to the installation. The installation program displays a language selection box 204, prompting the customer to select a language preference from the menu list. The installation displays the operating version on the screen 206. The installation program prompts the customer to enter a drive/directory to install the program 208. If the drive/directory selection is not accessible 210, then the customer is prompted to select cancel 212, that halts the installation process 214, and the installation program exits the computer's operating System 216. If the drive/directory selection is accessible, then the program checks to make sure there is not another version of the program on the selected drive\directory 218. If there is another version of the application(s) present, then the System displays a box indicating a previous version of the installation program has been detected on the selected drive\directory 220. The customer may choose to continue with the installation 222 which will override the previous version and begin installing the software on the client's computer 224. The customer may also choose to not continue with the installation 222, allowing the customer to select a different drive\directory for installation. If a previous version has not been detected 218, then the System installs the software on the client's computer 224. Once disk # 1 is installed, the customer is prompted to insert disk #2 226. The customer can choose to continue with the installation 228, displaying the percent complete indicator 230. The installation continues, with the System displaying messages a) program manager icons created, b) fonts installed, and c) installation complete 232. The System then boots out of the installation program and returns to the operating System 234.

After the installation program has been completed, the home computer is configured for operation in the home environment. The System displays a program group and a icon on the desktop for the customer to launch the configuration program. This configuration program runs only once during the initial program startup. The configuration program described in FIG. 5 starts by displaying a splash screen 250. The System displays the name and bank card dialog box screen 252 prompting the

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customer to enter their name and bank card number 254. If either the name or bank card number is not entered, the customer is prompted to cancel 256, or returns to the dialog box 258 to enter customer's name and bank card number 254. If the customer chooses cancel, the System returns a dialog box as to whether the customer is sure to cancel 260. If the customer chooses yes, then the program exits to the operating System 262. If the customer chooses no, then the program returns to the dialog box to enter customer's name and bank number 258.

If the customer properly enters their name and bank card number, then the customer may select a language from the dialog box to communicate with the bank server 266. The System displays a dialog box indicating that the configuration program is checking the modem 268. If the modem is not found 270 the System will display a dialog box indicating that the modem has not been found 274. The customer will be prompted again to retry 276. If the customer selects cancel, the System prompts customer to cancel 256. If the customer chooses yes, then the System prompts the check modem dialog box 268. A dialog box is displayed on the next screen 278 allowing the customer to select modem parameters. If the customer selects cancel, the System prompts customer to cancel 256. If the customer selects back, then the System returns to the language selection dialog box 280. If the customer chooses next, or if the modem was found in the initial checking for the modem 270, then the System displays a dialing method dialog box flowcharted on FIG. 6 300.

The customer may choose before or after entering the dialing method (rotary or push-button) at the dialing method dialog box to "Cancel" which prompts the cancel dialog box (FIG. 5) 256, or may choose "Back," which returns the customer back to the select language dialog box (FIG. 5) 266. The customer may also choose next after entering the dialing method 300, that displays the outside line code dialog box 306. The System prompts the customer to enter a set of numbers if the customer needs to dial extra digits to reach an outside line. The customer may again choose "Cancel," returning the customer to the cancel dialog box (FIG. 5) 256, or may choose "Back," which will return the customer to the previous screen. Choosing next delivers the disable call waiting dialog box 308, prompting the customer to enter the

disable call waiting code. The customer may again choose "Cancel," returning the customer to the cancel dialog box (FIG. 5) 256, may choose "Back," which will return the customer to the previous screen, or choose "Next."

5 Where needed, such as in Belgium, the System will display a re-enable call waiting dialog box 310 when "Next" is chosen from the disable call waiting dialog box. The customer may again choose "Cancel," returning the customer to the cancel dialog box (FIG. 5) 256, may choose "Back," which will return the customer to the previous screen, or choose next that will display the phone number dialog box 312. This dialog box will prompt the customer to enter a primary and secondary number to
10 the bank for dialing purposes. The customer may again choose "Cancel," returning the customer to the cancel dialog box (FIG. 5) 256, may choose "Back," returning the customer to the re-enable call waiting dialog box 310 if the System is configured for enable call waiting 314, or to the disable call waiting dialog box 308 if the System is not configured for enable call waiting. The customer may also choose "Finish" that
15 will display, if not entered previously 316, a dialog box indicating that the customer must enter the primary phone number in the phone number dialog box 318. If the customer has already entered a primary number, then the initial configuration is complete, and the bank greeting screen is displayed 320. The customer may either exit the program 330, select the dial button to access the bank server 322 described in
20 FIG. 6, or run the subsequent configuration program 326 described in FIG. 7 by selecting the "Configure" button.

 The customer may add a configuration, modify a configuration, or delete a configuration using the subsequent configuration flow. Once the configure button 352 is selected at the greeting screen 350, the System displays a list of customers
25 provided access 354. The customer may add users 356, or modify users 358, by activating the add/modify user profile dialog box 372. The customer can enter user profile information into the appropriate spaces, or can select from the pull down menu selections. The System prompts the customer to change the modem settings 374. If the customer chooses to add or modify the modem settings 376, then the System
30 displays a modem settings dialog box, allowing the customer to add a modem setting

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or modify an existing setting. If a modem setting can't be initially found, the customer can select find modem 378 that displays a dialog box indicating the port the System is checking. The System will return back to the modem settings dialog box if the modem was found, where the customer can select OK to save the modem settings 380. The System then returns to the add/modify user profile dialog box 372, where the customer can select OK to save the user profile 382.

When the System prompts the customer to change the modem settings 374, the customer may also choose not to make any changes. The System will look for a customer name and card number 384, and if present, the customer a save the user profile data by selecting OK 386. The System then returns to the add/modify user profile dialog box 372, where the customer can select OK to save the user profile 382.

If the customer does not wish to add users 356, or modify users 358, and if the customer wishes to delete a user 360, then the System will check if the deletion is the last listed user 362. If the customer attempts to delete a last listed user, then a dialog box appears on the screen indicating that the customer can't delete the last user. The customer select OK, saving the user profile data 364. If the deletion is not the last user, then the deletion may proceed, and the System will display a dialog box asking if the customer is sure 366. If the customer chooses yes, then the user information is deleted from the initialization file of the home banking program 368. If the customer chooses no, or if the customer chooses no when the System asks if the customer wishes to delete a user 360, then the System returns to the display with a list of users 354.

If the System selects the dial button to access the bank server, as described in FIG. 6 322, then the System sends an authorization message to the bank server FIG. 8 400. The authorization message is then sent to the bank security server 402. From the security server, the authorization message is next to the bank hardware encryption devise 404, then to the business host for hookup authorization 406. The business host sends a response back to the server to provide access 408. A link is formed between the customer, bank server and business host 410.

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Marketing messages can be delivered to the home customer when initiated by the small financial System as described in FIG. 9. The small financial System requests to download the most recent marketing message table to the home services delivery System 500. The System sends a message to the integrator to end session 502. If a data exchange code is not present 504, then no marketing message table download will be conducted 506, and the System application remains in product select 508. If a data exchange code is present, then the System takes the CAT out of service to allow for marketing message download 510. Data exchange code routing value other than two 512 have been assigned to future applications 514. If the data exchange code routing values equals two 512, then the System checks if the updated table is available 516.

If the updated table is available for download, then the System compares the home banking code table time stamp to the host table code 518. If the time stamps are the same, then the System sets the download status code to already loaded 520. If the codes are not the same, and if the home banking table code is greater (after) than the host table code 524, then the System sets the download status code to have a newer table 522. In both cases, the System then directly sets the index position indicator to spaces 562 as described in FIG. 10.

If the home banking table code is less than the host table code, or if the Updated table is not available for download, then the System must set the marketing message old table to the marketing message Updated table as well as setting the table time stamp save to the home banking table code 528 for the System to obtain the marketing message table 530.

To obtain the marketing message table from the small financial System, the System needs to set the index position indicator as described on FIG. 10. To begin downloading, the System sets the index position indicator to spaces 568, and set the download status code to ready for next message 570. The small financial System sends a message via the integrator to request to send marketing message 572. The System checks the action code 574, and if the action code is not equal to zero, then the System sets the download status to load failed 578 and the process is terminated 582.

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If the code is equal to zero, then the System adds entries from the message to the marketing message table 576. The System then checks if the index position indicator is equal to the spaces 580. If it is equal, then the System checks if the download status is equal to zero (FIG. 9) 534. If the download status is not equal to zero, then the System directly sets the index position indicator to spaces 562. If it is equal to zero, then the System sets the home banking table code to the host table code (FIG. 10) 550, before writing to the hard disk the marketing message Updated table and the home banking table code 552. If the write was successful 554, then the System sets the download status code to good completion 560. When it is not greater, then the marketing message Updated table must be set to the marketing message save table 556, with the download status code set for load failed 558.

Once the download status codes have been set, and the index position indicator to spaces has been set 562, then the host send a message via the integrator to send marketing message 564. Once the marketing message has been sent, the System returns to product select 566.

The home services delivery System provides the customer with the mechanism to maintain an updated payee list for their account as described in FIG. 11. This process is initiated when the customer sends a profile response 600, which activates profile response flow as described in FIG. 35. The customer waits for a profile message return 604, and the System sends a message via the integrator to the host for the retrieval of the customer's payee list 606. Once the response has been received 608, the customer decides what type of action to take. The customer may choose not to delete a payee from the list, but to view the payee list 660 as described in FIG. 12. The customer may choose to delete a payee from the list (FIG. 11) 610, whereabouts the System returns the payees list and the customer determines the number of payees 614. If the System returns no payees, then the System displays an error message 616, and activates the product select transaction selection 618. If the System returns the number of payees equal to one 620, then the System displays the payee's record 622.

The customer at this time may choose to delete the payee from the list 624, where the System prompts the user to re-enter their personal identification number

(PIN) 626, as described in FIG. 34. The System will then send a message via the integrator to the host to delete the payee from the customer's list 630. Once the response is received 632, the System queues the record 634, before exiting the module to the product select transaction selection 618. If the customer chooses not to delete the payee from the list 624, then the System displays a message that the customer has chosen not to delete payee from the list 636, where the System then exits to the product select transaction selection 638.

When the System returns the payee list 614 and the customer determines that the System returned more than one payee 640, then the customer has to choose which payee to delete 642. If the customer selects the payee to delete with the information given, then the System will display the payee record 622. However, if the customer requires more data 644, then the customer can divide the payee list into sections 646, and then the System sends a message via the integrator to the host for the payee list 648 to provide additional information to the customer 650.

As previously indicated, the customer may not wish to delete a payee from the list 610, but may wish to view their payee list 660 as described in FIG. 12. If the number of records on the payee list is zero 662, then the System returns a no payee response and displays an error message 676 before exiting to the product select transaction selection 678. If the number of records does not equal zero, the System returns the payee list for viewing 664. If the customer wishes to view additional payees from the list 666, and if the customer requires more data 668, then the customer can divide the payee list into sections 670, and then the System sends a message via the integrator to the host for the payee list 672 to provide additional information to the customer 674.

The home services delivery System provides the customer with the mechanism to maintain an updated direct debit list for their account as described in FIG. 13. This process is initiated when the customer sends a profile response 700, which activates profile response flow as described in FIG. 35. The customer waits for a profile message return 704, and the System sends a message via the integrator to the host for the retrieval of the customer's direct debit list 706. Once the response has been

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received 708, the customer decides what type of action to take from the direct debit list received from the System 710. If the customer determines that the System returned more than one direct debit 712, then the customer has to choose which direct debit to display 714. If the customer selects the direct debit with the information given, then the System will display the record 750 as described in FIG. 14. However, if the customer requires more data (FIG. 13) 716, then the customer can divide the direct debit list into sections 718, and then the System sends a message via the integrator to the host for the direct debit list 720 to provide additional information to the customer 722.

If the System returns no direct debits, then the System displays an error message 728, and activates the product select transaction selection 730. If the System returns the number of direct debits equal to one 724, then the System displays the direct debit record 750 as described on FIG. 14.

Prior to canceling a direct debit record, the customer may choose to view the transaction type 752. The customer may also choose not to cancel a direct debit record 756. If so 758, the System will activate the product select transaction selection 754. However, if the customer does wish to cancel a direct debit, then the System prompts the user to re-enter their personal identification number (PIN) 760 as described in FIG. 34. The System then sends a message via the integrator to the host to cancel the direct debit record (FIG. 14) 764. If the System returns a response of fifty-one 766, the customer must retry their PIN as described on FIG. 37. The System then re-sends the message via the integrator to the host to cancel the direct debit record 764 with the correct PIN. If the System returns a response of zero 774, then the System displays a message that indicates that the customer has chosen to cancel the direct debit record 776. The System will then queue the record 778, prior to exiting to the product select transaction selection 754. If the System returns a response to the cancel direct debit of other than zero or fifty-one 770, then the System checks for standard errors as described in FIG. 38.

An additional feature of the home services delivery System is that the customer may buy and sell mutual funds from their home as described starting with

FIG. 15. The process of buying mutual funds is flowcharted beginning with FIG. 15, and includes FIGS. 17-22. The process of selling mutual funds is flowcharted beginning with FIG. 16 and includes FIGS. 17, and 18 through 23.

5 Buying mutual funds is initiated when the customer sends a profile response
FIG. 15, 800, which activates the profile response flow as described in FIG. 35. The
customer waits for a profile message return 804, and the System responds by asking if
the customer has designated a security account 806. If the customer is required to
have a designated security account, but does not have one 808, then the System
displays an error message that no security accounts are available 810 and the
10 transaction is ended with the System exiting to product select transaction selection
812. If the customer is not required to have a designated security account, or if the
customer is required to have a designated security account and has at least one
security account 808, then the System sends a get mutual fund message and begins to
retrieve mutual fund data from the host 814 as described in FIG. 17. The customer
15 selects which mutual fund to purchase 818, as described in FIG. 18, which the
customer may choose to review 822 as described in FIG. 19, prior to entering the
buying amount 826 as described in FIG. 42. The customer is then asked to enter a
transaction account 830 as described in FIG. 20, and a security account 834 if required
to specify 836. If the customer is required to specify security account 836, then the
20 System determines if the number of security accounts is equal to one 838. If the
number of accounts is one, then the account is set 844. But when the number of
accounts is not one then the System prompts customer to set security account of
choice 840. Once a security account is selected by customer 842, and the account is
set 844, the customer may place the mutual fund order 846. If the customer is not
25 required to specify the security account, then the customer may directly place a
mutual fund order as described in FIG. 21. The customer re-enters their PIN number
850, as outlined in FIG. 34, and then sends a message to the host via the integrator for
sell mutual fund authorization 854. The customer checks the mutual fund transaction
response 856 as described in FIG. 22, and after the successful transaction 860, the

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record is queued and the order placed 862, prior to the System exiting to the product select transaction selection 864.

Selling mutual funds is initiated when the customer sends a profile response FIG. 16, 874, which activates the profile response flow as described in FIG. 35. The customer waits for a profile message return 876, and the System responds by sending a get mutual fund message and begins to retrieve mutual fund data from the host 880 as described in FIG. 17. Once received, the customer selects the mutual fund to sell 884, as described in FIG. 23, and reviews the mutual fund 888, as described in FIG. 19. If the customer chooses to sell all the shares of the mutual fund 892, then the System sets the sell all flag to true 898. If the customer chooses to only sell a portion of the mutual fund shares, then the System prompts the customer to enter the mutual fund sell amount 894, as described on FIG. 42. After the customer has made the decision as to the amount of shares to sell of a particular mutual fund, the System prompts the customer to enter a transaction amount 900 described in FIG. 20 that allows the customer to place a mutual fund order 904, as described in FIG. 21. To place a mutual fund order, the customer must re-enter their personal identification number 908 as described in FIG. 34 that enables the customer to send a message via the integrator to the host for sell mutual fund authorization 912. The customer checks the mutual fund transaction response 914, as described in FIG. 22, and after the successful transaction 918, the record is queued and the order placed 920, prior to the System exiting to the product select transaction selection 922.

FIG. 17 outlines the process of retrieving mutual funds from a host and being able to sell mutual funds from a home banking delivery System. The process begins when the customer sets the action to buy or sell mutual funds 930. A message is sent via the integrator to the host to list mutual funds 932. If disclosure is required 934, then the System displays the disclosure screen 936. At this point, the customer may continue with the process 938 or exit application and activate product select exit processing 940. If a disclosure is not required, and if the customer has not received a message response yet 942, then the System waits for a response from the host and displays the appropriate screen 944. If a response received is equal to zero 946, then

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more data will be needed to be sent to the host 956, and the process will begin at the point where the customer sets the action to buy or sell mutual funds 930. If there is no more data needed for the host, then the System continues with the mutual fund application described on FIGS. 15 and 16.

5 If the response received from the host is equal to 64 948, then the System will display a message that the process can not be completed 952, and the System activates the product select transaction selection 954. If the response from the host is other than 00 or 64, then a standard error is committed as described on FIG. 38.

10 If the customer wishes to make a selection for a mutual fund to purchase, then the System accesses the number of mutual funds from the host as described in FIG. 18. If the number of mutual funds returned equals zero 970, then the System displays a message stating the inability to perform the process 986, and the System exits the application and activates the product select transaction selection 988. If the number of mutual funds is greater than zero, but does not equal to one 972, then the table is
15 created returning each mutual fund type only once 974. If the number of mutual fund types in the table is equal to one 976, then the mutual fund is selected 982. If the number of mutual funds is more than one, then the customer selects a mutual fund 978. Once the customer has chosen a mutual fund 982, or if the number of mutual funds returned from the host equals one 972, then the System determines if the
20 selected mutual fund can be purchased from a home banking environment 980. If the mutual fund can not be selected from the home banking environment, then the System displays a message stating the inability to place the mutual fund order 990, and the System exits the application and activates the product select transaction selection 988. If the mutual fund can be selected from the home banking environment, then the
25 mutual fund selection is placed 982 and the System continues with the mutual fund application described on FIG. 15.

30 Prior to entering a buying or selling amount for the mutual fund, a customer will be able to review the mutual fund performance (FIG. 19). If the customer is buying a mutual fund 1000, and if the fund is owned 1002, and if the fund is not held in more than one account 1004, then the System displays the owned mutual fund

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information that is for purchase **1006**. If the fund is not owned, or if an owned fund is held in more than one account, where the System does not allow the customer to be involved in purchasing the mutual fund, and the System will display new mutual fund information for purchase **1008**. If the customer is involved in selling a mutual fund, then the System directly displays the mutual fund information **1010**. The System displays any fee or restrictions associated with the mutual fund **1012**, and if the customer wishes to continue **1014**, then the status of the mutual fund purchase or sell remains unchanged **1016**, and the System continues with the mutual fund application described on FIGS. 15 and 16. If the customer does not wish to buy or sell the mutual fund, then the System displays a message that the order will not be placed **1018**, and the System exits the application and activates the product select transaction selection **1020**.

Once the customer has entered the buying or selling amount, the System prompts the customer to enter a transaction account (FIG. 15, **830**, or FIG. 16, **900**). If the System does not return a transaction account **1030**, then the customer enters a transaction type code to specify buying or selling of a mutual fund **1032**. If the customer is buying a mutual fund, then the System displays a screen asking the customer to select an account to withdraw from **1034**. If the customer is selling a mutual fund, then the System displays a screen asking the customer to select an account to place the money from the sell **1036**. Once the customer has selected an account **1038**, as described on FIG. 40, then the source account must be resolved **1042**, as described on FIG. 39. This process will set the account to the selected transaction account **1046** and the System continues with the mutual fund application described on FIGS. 16 and 17.

If the System returns a transaction account directly **1030**, then the System checks if the transaction account is in the customer's profile **1048**. If the transaction account is not in the customer's profile, then an application error occurs **1049**, and the System displays an application error **1050**, before exiting to product select **1051**. When the transaction account is in the customer's profile, then the System sets the

customer account to the transaction account **1052**, and continues with the mutual fund application described on FIGS. 15 and 16.

After completing the previous procedures, the customer is ready to formalize the buying or selling of a mutual fund **1060** as described on FIG. 21. If the customer is buying a mutual fund, the System displays a message to customer that a buy order is to be placed **1062**. If rounding disclosure is not required **1064**, then the customer decides on whether to place the order **1066**. If the customer decides not to place the order for the selected mutual fund, then the System returns a message that the order will not be placed **1068** and the System exits the application and activates the product select transaction selection **1070**. When the customer chooses to place and order **1067**, the System continues with the mutual fund application described on FIGS. 15 and 16.

The System displays the rounding disclosure when required **1072**, and will give the customer the same choice of choosing to place the mutual fund order **1066**.

If the customer is to sell a mutual fund, then the System checks if the sell all flag is set for true **1074**, in which case the System displays a message that the customer is ready to place sell order by shares **1078**. If the sell all flag is not set for true **1074**, then the System displays a message that the customer is ready to place sell order by dollar amount **1076**. In both cases, the customer will be given the same choice of choosing to place (sell) the order.

When the mutual fund order has been set, the customer may check the mutual fund transaction response as described on FIG. 22. This portion of the application is driven by the responses using action codes. If the action code is equal to zero **1100**, then the System continues with the mutual fund application **1102** as described on FIGS. 15 and 16. However, if the action code response is not zero, but is four **1104**, then the System sets a reversal reason code to the host for a time-out **1106**. If the action code response is equal to five **1108**, then the System sets a reversal reason code to security device **1110**. If the action code response is twenty nine **1112**, then the System sets the reversal reason code to integrator format error **1114**. For the above action codes except for zero, the System sends a message via the integrator to the host

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to reverse the mutual fund order 1116. If the action code response is fifty-one 1118, then the customer has entered a bad PIN 1122 and the System checks for bad PIN as described in FIG. 37. For all responses except zero and fifty-one, the System looks for standard errors as described on FIG. 38.

5 When the customer is selling a mutual fund and has retrieved the mutual fund data for review as described in FIG. 16, the customer may need to make a selection as to which mutual fund to sell as described in FIG. 23. If the number of mutual funds returned for sell is equal to one 1130, then the System determines if this process is allowed in a home banking environment 1132. If the process is allowed, then the
10 mutual fund order continues as described on FIG. 16. If the process is not allowed, then the System displays a message that the order can not be placed in a home banking environment 1134 and the System exits the application and activates the product select transaction selection 1138. If the mutual funds returned is equal to zero 1140, then the System displays a message that no mutual funds are available 1142,
15 and the System exits the application and activates the product select transaction selection 1144.

 When the number of mutual funds returns is not zero or one, then the System attempts to designate a security account 1146. If there is no security account, then the System displays a message to the customer to select a mutual fund 1148, and the
20 System determines if this process is allowed in a home banking environment 1132. If the process is allowed, then the mutual fund order continues as described on FIG. 17. If the process is not allowed, then the System displays message that the order can not be placed in a home banking environment 1134 and the System exits the application and activates the product select transaction selection 1138.

25 If the customer can designate a security account, and if the number of security accounts is equal to one 1150, and if the number of funds in the security account is not equal to one 1154, then the customer can select a mutual fund in the security account to sell 1156 as long as the process is allowed in a home banking environment. If
30 needed, the customer can select a security account 1152 when there are more than one security account.

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Another function which the customer can perform on their home (client) personal computer is retrieving account information. The account information application provides the customer to see balances or view historical transactions on accounts linked to a customer's account as discussed on FIG. 24. When the customer selects account information from the menu choice as shown on FIG. 3, the System sends a profile response (FIG. 24) 1200 to determine the number of customer accounts as described on FIG. 36. The customer waits for a message return 1202, and at such a time, the System will prompt the customer to re-enter their personal identification number 1204 as outlined on FIG. 34. When there is only one account in the customer's profile 1206, then the account is set 1208 and the System begins to retrieve specific account information as described in FIG. 26. If the System returns a number of customer accounts greater than one 1206, and if the System checks determine that the message summary request flag is set for false 1212, then the summary transaction is successful 1220. If the System checks determine that the message summary request flag is set for true 1212, then the customer can request that a message is sent to the host to send the summary request information of the account 1214. After the request has been made 1216, then the message summary request flag is set to false 1218 to allow for a successful summary transaction 1220. When the number of categories returned is not equal to one 1222, then the System checks if the summary totals flag and the financial overview flag are on 1224. If the flags are not on, or if the flags are on, but no totals are returned 1228, then the System displays the summary with no totals 1226. The System displays the summary with totals 1230 when totals are returned. In both cases, the customer may choose not to continue with account category selection 1232, and to exit the application 1234.

If the customer chooses to continue by selecting a category 1235, or if the number of categories initially returned 1222 was one, then the System checks if there are any accounts in the customer selected category 1236. When no accounts are located in the category 1238, the System exits specifically to the product select-transaction selection application 1240. When one account is located in the category 1242, then the System sets the account 1244 and the System continues to account

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balance/inquiry as described on FIG. 26. But when the customer has more than one account in the selected category, then the System sets the list of accounts equal to all the accounts in the category 1246, and a screen display appears with the product details 1248. If the customer selects an account at this time 1250, then the System sets the selected account 1252, and continues to account balance/inquiry as described on FIG. 26. If the customer chooses not to select an account, and the number of categories returned is equal to one 1254, then the System exits the application to product select 1256. When more than one category is returned, the System returns to allow the customer to select an account in the category 1235.

One of the submenu functions that exists under account information is the account inquiry and balance information as described on FIG. 26. The System will initially determine the product class of the information requested. When the product class is not a securities or mutual fund 1300, then the System sends a message to the host to send balance information 1302. The customer waits for the response from the host 1304. When the account information transaction returns 1306, the customer may immediately print the balance 1308, queuing the data for printing 1310. After printing is complete (if chosen), the System determines what type of product class the request is for. If the product class is a savings with notice, plan epargne logement, loan, time deposit, or installment savings 1312, then the System will display the appropriate message 1314. All other product classes are described on FIG. 27.

When the information requested is for a savings with notice, then the System displays a message "Here is your savings with notice" 1316 with available data about it included on screen (FIG. 26). When the information requested is for a travel and entertainment cards, then the System displays a message "Here is your travel and entertainment cards" with available data about it included on screen 1318. When the information requested is for a loan, then the System displays a message "Here is your loan" with available data about it included on screen 1320. When the information requested is for a combined checking and combined revolving credit, then the System displays a message "Here is your combined checking and revolving credit" with available data about it included on screen 1322.

Additional types of product class data messages included in this portion of the application are discussed on FIG. 27. When the System displays the appropriate message 1324, and the information requested is for a time deposit, then the System performs a series of identifications as to the different types of deposits the customer is inquiring on. When the product type is a time deposit 1326, then the System displays a message "Here is your time deposit" with available data about it included on screen 1328. When the product type is a certificate of deposit 1330, then the System displays a message "Here is your certificate of deposit" with available data about it included on screen 1332. When the product type is a premium high yield deposit 1334, then the System displays a message "Here is your prem/prov one time version" with available data about it included on screen 1336. When the product type is a savings certificate 1338, then the System displays a message "Here is your savings certificate" with available data about it included on screen 1340.

For installment savings 1342, there are two different product types. For prem/prov installments, the System displays a message "Here is your prem/prov installment version" with available data about it included on screen 1344. The other type of installment savings offered are government sponsored savings 1346, which the System displays a message "Here is your government sponsored savings" with available data about it included on screen 1346.

When the product type is a plan epargne logement, the System displays a message "Here is your plan epargne logement" with available data about it included on screen 1348. When the product type is a combined savings, the System displays a message "Here is your combined savings" with available data about it included on screen 1350. When the product type is a deferred debit, the System displays a message "Here is your deferred debit info" with available data about it included on screen 1352. When the product type are revolving charge cards, the System displays a message "Here is your revolving charge cards" with available data about it included on screen 1354.

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Two product types that share functions are revolving loan and checking.

When the product type is a revolving loan 1356, the System determines if the sub-product code is 1 through 25 1358. If the sub-product code is not 1 through 25, then the System displays a message "Here is revolving loan" with available data about it included on screen 1360. When the revolving loan sub-product code is 1 through 25, then the System displays a message "Linked checking/revolving credit" with available data about it included on screen 1362. When the product type is checking 1364, and the sub-product code is 1 through 25 1366, then the System again displays the same message 1362. But when the checking sub-product code is not 1 through 25, then the System checks for overdraft limit 1368. If there is overdraft limit, then the System displays message "Checking with overdraft line" with available data about it included on screen 1370. But if no overdraft limit is returned, or if the product type is savings 1372, then the System displays a message "Checking without overdraft line" with available data about it included on screen 1374.

For all of the above product types and sub-products, after the System displays the message and information about the product type, the System can access additional account information through the transaction journal process as initially described in FIG. 30.

When the customer initially started the account inquiry or balance process, as described on FIG. 26, the System determined if the product class is a securities and/or mutual fund. When it is, the System begins process the inquiry by sending a message via the integrator to the host to send the customer's security portfolio 1376. The customer waits for a response from the System 1378 for a successful account information transaction 1380 at which time the System determines if the product class is a securities or mutual fund 1382. If the return is a mutual fund, then the System displays a message "Here is your mutual fund" with available data about it included on screen 1384, and the System can access additional account information through the transaction journal process as described in FIG. 30. However, if the product class is a security 1386, then the System determines if there are more than one security in the subaccount 1388. If there is only one security in the subaccount 1390, then the

System determines the security type as described on FIG. 29. If there are no securities in the subaccount, then a message is displayed 1392, and the System exits to product select-transaction selection 1394.

5 When there are more than one security in the subaccount 1388, then the System displays the security details 1396. If the customer selects a security 1398, then the System determines the security type as described on FIG. 29. If the customer has not selected a security, then the System can inquire if there are other accounts in the category for inquiry 1400. When there are other accounts in the category, then the category can be set 1402, as described on FIG. 25, but when other accounts in the
10 category do not exist, then the number of accounts in the profile is determined 1404. If the number of profiles is equal to one, then the System exits to product select 1406, or else the System returns to the beginning of the account information application as described on FIG. 24.

15 Additional descriptions of security information is found on FIG. 29. When a customer has selected a security, the balance may be printed 1408, by queuing the record to the printer 1410. The System determines what type of security the customer has selected. If the security type selected is a valued stock 1412, then the System displays "Here is your valued stock" with available data about it included on screen 1414. If the security type selected is a valued bond 1416, then the System displays
20 "Here is your valued bond" with available data about it included on screen 1418. If the security type selected is an unvalued stock 1420, then the System displays "Here is your unvalued stock" with available data about it included on screen 1422. If the security type selected is an unvalued bond 1424, then the System displays "Here is your unvalued bond" with available data about it included on screen 1426. If the
25 security type selected has no data 1428, then the System displays "Here is your security-no data" 1430. If the security type selected is a mutual fund 1432, then the System displays "Here is your mutual fund" with available data about it included on screen 1434.

30 For all of the security types, including mutual bonds, after the System displays the message and information about the product type, the System can access additional

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account information through the transaction journal process as initially described in FIG. 30.

Additional account information (FIG. 30) can be obtained at the home banking environment once the product type has been determined or if the product class is a security. If the transaction journal is supported 1436, then the System displays message that the recent activity is offered 1438. If the customer does not wish to continue with the current account information 1440, then the customer may retrieve account information 1442, or exit to product select 1444. If the transaction journal is not supported, then the System displays a message that no recent activity is offered 1448, and the customer is again given a choice to continue 1450 with account information retrieval or exit to product select 1452.

When the customer decides to continue with the account information, then the System determines if the product class is a security 1454. If the product class is a security, then the System determines if there are other product securities in the subaccount 1456, and if so, set the subaccount 1458 as described on FIG. 28. If there are not product securities in the subaccount, or if the product class is not a security, then the System determines if there are other accounts in the category 1460, and if so, set the category 1462 as described on FIG. 25. If there are no accounts in the category, and if the number of accounts in the profile is greater than one 1464, then the System exits to product select 1466. However, if the number of accounts in the profile is one, then the System displays the product details so that the customer may select an account as described on FIG. 25.

To start the transaction journal process, the System sends a message to the host to send the transaction journal 1468 as described on FIG. 31. When the response 1470 is returned and the action code is not zero 1471, then a standard error has occurred 1472 as described on FIG. 38. An action code of zero allows the customer to choose the activity 1473 which will display one of the following screens. The choices are as follows: activity with available data included on screen and no printing 1474; activity with available data included on screen and printing option 1476; most recent activity with available data included on screen and no printing 1478; most

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recent activity with available data included on screen and printing option **1480**; earlier or later activity with available data included on screen and no printing (FIG. 32) **1500**; earliest activity with available data included on screen and no printing **1502**; earlier or later activity with available data included on screen and printing option **1504**; earliest activity with available data included on screen and printing option **1506**; and no activity **1508**. The no activity indicates a successful count for the transaction journal transaction **1510** and the System exits to product select-transaction selection **1512**. All other activities are categorized as to if it is an earlier or later activity **1514**, in which case, the customer may choose to see more transaction journals **1516** as described on FIG. 31. If the activity is not an earlier or later one, then the customer may choose to print the transaction journal (if an option) **1518** as described on FIG. 33. If the customer does not choose to print activity, then the System determines that the count is successful for the transaction journal transaction **1520**. If the product class is a security **1522**, and if there are other securities in the subaccount **1524**, then the System sets the subaccount **1526** as described on FIG. 28. If the product class is not a security, or if the subaccount has no other securities, and if there are other accounts in this category **1528**, the category is set **1534** as described on FIG. 25. However, if there are no other accounts in the category, and the number of accounts in the profile is equal to one **1530**, then the System exits the application to product select **1532**. If the number of accounts in the profile is not equal to one, then the System starts the account information process over as described on FIG. 24.

Printing a transaction journal is described in FIG. 33. When the customer selects print (when available), the System sends the document to the queue, and the System displays a message, "Just a moment, I'm printing" **1550**. If the print is successful **1552**, then the System returns to the transaction journal process described on FIG. 32. If the print was not successful, then the System displays message, "Print Failure" **1554**. The customer may choose to view more transaction journal activity **1556** described on FIG. 32, or choose the successful count for the transaction journal transaction **1558** and exit to product select **1559**.

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For the common routine re-enter personal identification number (FIG. 34), the System checks if this is the first transaction of the session 1560. If it is, then the System returns to the original application. If it is not the first transaction, the System checks if re-entry is required for a transaction 1562. If re-entry is not required, then the System returns to the original application. If re-entry is required, the System sets the try count to zero 1564. The System displays a message prompting the Customer to input their personal identification number (PIN) 1566. The System checks if the PIN entered is the same as a validated number 1568. If it is, then the System returns to the original application. If is not, then the System increments the try count by one 1570. The System checks if the try count is equal to three 1572. If the try count is greater than three, the System displays a message that the PIN is not recognized 1574 and queries if the Customer wants to try again 1576. If they answer yes, the System sets the try count to zero 1564. If the try count is equal to three, then the System displays a message that the PIN is not recognized 1578. The System checks if the try count is equal to zero 1582. If it is not, the System checks if end of session notification is required 1584. If it is, the System sets the end of session notification code equal to session end with bad personal identification number 1586. The System sends a message via the integrator to the host to set retry equal to infinity 1588. If end of session notification is not required, the System sends a message via the integrator to the host to set retry equal to infinity 1588. The re-enter PIN then terminates 1590.

For the common routine check profile response (FIG. 35), the System checks if this is the first transaction of the session 1600. If it is not, then the System returns to the previous figure 1602. If it is, the System checks if a response has already been received 1604. If it has not, the System displays a message "Waiting for Response" 1606. If it has, the System checks if the response is equal to 51 1608. If it is, the System sets retry bad personal identification number (PIN) for profile 1610. The System sends a message via the integrator to the host to send profile request 1612. If the response is not equal to 51, the System checks if the response is equal to zero 1614. If it is not, the System returns to FIG. 38. If the response is equal to zero, the System saves the validated profile data 1618. The System checks if a marketing

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message has been received in the profile 1620. If it has, then the System downloads a marketing message 1624. If it has not, then the System checks if the marketing message default table criteria has been met 1622. If it has, then the System downloads a marketing message 1624. If it has not, the System checks if track three data has been returned 1626. If it has not, the System returns to the original application. If it has, the System re-writes track three data 1628. The System returns to the original application 1632.

For the common routine check response (FIG. 36), for Subroutine 1, the System checks the response 1640. The System displays a message to wait a moment 1642. The System checks if the response is equal to zero 1644. If it is, the System returns to the previous Figure. If not, it issues a standard error 1648. The System goes to standard errors as described in FIG. 38.

For the common routine write track three (FIG. 36), for Subroutine 2, the System checks the response 1652. The System writes track three 1654. The System checks if write track three is OK 1656. If it is, the System returns to the previous Figure 1658. If not, the System sets write track three equal to one 1660. The System returns to the previous Figure.

For the common routine home processing (FIG. 36), for Subroutine 3, Home Processing 1663. The System activates the Product Select Application 1664 and select transaction 1666.

For the common routine bad personal identification number (PIN) (FIG. 37), the System displays the message "PIN Not Recognized" 1670. The System queries the Customer if they would like to try again 1672. If not, the System logs onto product select 1674. If yes, the System displays a message for the Customer to input their PIN 1676. The System checks if it is a valid length for the card prefix 1678. If not, the System displays the message "Personal Identification Number (PIN) Not Recognized" 1670. If it is valid, the System sends a message via the integrator to the host to re- send the message 1680. The System displays the message "Just a Moment, Please" 1682. The System returns to the previous Figure.

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For the common routine standard errors (FIG. 38), the System checks if the response action code is equal to 53 1700. If it is, the System checks if track three data has been returned 1702. If it has, the System goes to FIG. 36 Subroutine 2. If not, the System displays the message "Personal Identification Number Not Recognized" 1704.

5 The System checks if the response action code is equal to 20, 29, 30, or 96 1708. If it is, the System displays the message "Application Error" 1710. The System logs onto the specific options of the Product Select dependent on the standard error 1732. If not, the System checks if the response action code is equal to 04, 05, 97, or 171 1712. If it is, the System displays the message "Temporary Delays" 1714. The System logs

10 onto the specific options of the Product Select dependent on the standard error 1732. If not, the System checks if the response action code is equal to 93 1716. If it is, the System displays the message "Transaction Not Supported" 1718. The System logs onto the specific options of the Product Select dependent on the standard error 1732. If not, the System checks if the response action code is equal to 64 1720. If it is, the

15 System displays the message "Can't Do" 1722. The System logs onto the specific options of the Product Select dependent on the standard error 1732. If not, the System checks if the response action code is equal to 95 1724. If it is, the System displays the message "Temporary Delays" 1726. The System logs onto the specific options of the Product Select dependent on the standard error 1732. If not, the System checks if the

20 standard error response is other than 04, 05, 20, 29, 30, 32-38, 53, 64, 93, 95-97, or 171 1728. If it is, the System displays the message "Can't Do Now - Call" 1730. The System logs onto the specific options of the Product Select dependent on the standard error 1732.

For the common routine account resolver (FIG. 39), the System makes a list of

25 all accounts of this type 1740. The System checks if there are two or more accounts 1742. If there are not, the System checks if there is one account 1744. If there is, the System returns to the previous Figure. If not, the System checks if there is exactly one product type 1748. If not, the System displays the message "No Accounts and

- More Than One Product" 1750. The System queries if the Customer would like to try

30 again 1752. If yes, the System queues to FIG. 40 before returning to FIG. 20. If not,

the System logs onto the specific options of product select 1760. If there is exactly one product type 1748, the System displays the message "No Accounts and One Product" 1758. The System logs onto the specific options of product select 1760.

5 If there are two or more accounts 1742, the System checks if balances are required 1762. If there are, the System sends a message via the integrator to the host to send balances 1764. If balances are not required, the System checks if there are any accounts remaining 1766. If there are, the System displays the message "Which of N" 1768. The System checks if the account selected is OK 1770. If it is, the System returns to FIG. 20. If not, the System checks if there are any accounts remaining 10 1766. If there are no accounts remaining 1766, the System displays the message "No More" 1774. The System queries if the Customer would like to try again 1776. If not, the System logs onto the specific options of product select 1760. If yes, the System resets the pointer to the top of the account list 1778. The System then checks if there are any accounts remaining 1766.

15 For the common routine account selection (FIG. 40), the System builds an account selection list 1800. The System checks if there is exactly one product type 1802. If there is, the System sets the product type equal to the one supported 1804. The System returns to the previous figure. If there is not exactly one product type, the System checks if there are three product groups 1808. If there are, the System 20 displays the message "Product Types in Three Groups" 1810. The System checks if the Product Type is a submenu 1812. If it is, the System builds an account selection list 1800. If it is not, the System displays the message "Set Product Type" 1814. The System returns to the previous figure.

25 If there are not three product groups 1808, the System checks if there are two product groups with greater than six product types 1816. If there are not, then the System displays the message "Two to Six Product Types" 1818. The System checks if the Product Type is a submenu 1830. If it is, the System builds an account selection list 1800. If it is not, the System displays the message "Set Product Type" 1814. The System returns to the previous figure.

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If there are two product groups with greater than six product types 1816, the System displays the message "Group Selection Overlay" 1820. The System deletes Product Types not in the selected group 1822. The System checks if the number of product types remaining is equal to one 1824. If it is, the System displays the message "Set Product Type" 1814. The System returns to the previous Figure. If it is not, the System re-displays the base screen from calling the application 1826. The System displays the message "Two to Six Product Types" 1818. The System checks if the Product Type is a submenu 1830. If it is, the System builds an account selection list 1800. If it is not, the System displays the message "Set Product Type" 1814. The System returns to the previous figure.

For the common routine determine amount (FIG. 41), the System checks the format for the currency amount 1840. The formats can be the amount keypad without decimal separator 1842; the amount keypad with period separator 1844; or the amount keypad with comma separator 1846. The Customer enters the amount 1848. The System checks if the amount is valid 1850. If it is, the System returns to the previous Figure. If it is not, the System checks if the amount entered is equal to zero or not understandable 1854; the amount entered is too large 1858; or, if the amount entered is below the minimum 1862.

If the amount entered is equal to zero or not understandable 1854, the System displays the message "Invalid Amount" 1856. If the amount entered is too large 1858, the System displays the message "Amount Too Large" 1860. If the amount entered is below the minimum 1862, the System displays the message "Amount Below Minimum" 1864.

The System queries the Customer if they would like to try again 1866. If yes, the System re-displays the appropriate base screen 1868 and the System checks the format for the currency amount 1840. If not, the System displays the message "No Retry" 1870. The System activates Product Select Transaction Selection 1872.

For the Product Select application (FIG. 42), the customer chooses the Product Select application from the Graphical User Interface screen and starts the customer session 1900 where the message is electronically delivered to the host 1902. When

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the Product Select session begins, the System displays a Hello message 1904 and the Customer inputs their card number 1906. The System identifies the Bank Identification Number (BIN) from the Card Prefix Table 1908. If the BIN was identified as an international card, or if the BIN could not be positively identified, then the international application is entered 1910. The System displays the appropriate language(s) 1912 according to the System configuration. The Customer inputs their personal identification number (PIN) 1914 and a profile message is sent for on-us cards 1916. The System displays the transaction menu(s) based on customer parameters 1918 and a record is printed 1920. If the Customer wishes to end the Product Select session 1922, the System displays the appropriate Thank You screen 1924, and the Product Select Application is ended 1926

For the Account Information Application (FIG. 43), the customer selects the account information button 1930 on the user friendly Graphical User Interface. The Customer inputs their card number 1932 and personal identification number (PIN) 1934. The System checks the customer profile to determine if the Customer has more than one account 1946. The Customer may view the transaction journal, if it is supported 1938 and may select recent activity to view 1940. If the security subaccount is selected, and the customer has more than one security, then detail screens will be displayed 1942 and the Customer selects the security subaccount 1944. If the System determines that the customer has more than one account 1946 the System sends a bank summary inquiry to the host via the integrator 1950. If more than one category exists, then the System displays categories without totals unless authorized 1952. The System sets the account list equal to number of categories 1954 and displays product details for customer to select an account 1956. The System then sends a bank balance inquiry to the host via the integrator 1958. If balances are returned 1960, the System displays the appropriate balance information screen 1962. If balances are not returned, an error message is displayed 1964. Once completed the Account Information Application is terminated 1966.

For the Account Transfer Application (FIG. 44), the System displays the account selection menu 1970 on the Customer's Graphical User Interface. The

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Customer selects the destination account 1972 and the System displays the appropriate keypad for the Customer to enter the transfer amount 1974. The System then displays another account selection menu to determine the source account 1976. If the Customer does not wish to proceed with the transfer, the System reverses the transaction on the host 1980 and the screen displays that no transfer has been conducted 1982 and exits the session. The System determines if the accounts are of the same currency 1978 and, if not, a screen displays the exchange rate, equivalent amounts, and commission fee from the host 1984. If the accounts are of the same currency and the customer wishes to make a transfer 1993, then the System displays a screen verifying the source and destination accounts and the transfer amount 1994. If the customer does not wish the make a transfer, then the screen displays a message that no transfer has been conducted 1982. The System then queries if the customer still wishes to make a transfer 1993. If not, a screen displays that no transfer has been conducted 1988 and the System exits the session. If the Customer still wishes to make a transfer, the System transfers the currency including foreign exchange rate and fee (if any) 1990 and the System displays a screen with the new balances for both source and destination accounts 1992. Once the transfer is complete, the Account Transfer Application terminates 1996.

For the Customer Service Application (FIG. 45 and FIG. 46) the Customer selects the Customer service button from the user friendly Graphical User Interface and the System accesses Customer Service processing (FIG. 45) 2000. The Customer is presented with five options - Re-order Checks session 2002; Change personal identification number (PIN) session 2024; Update Request session 2050; Give notice session 2068; and the Print balance summary session 2086.

For the first option, Re-order Checks session 2002, the Customer enters their card number and personal identification number (PIN) 2004. The System displays the account selection screen based on the bank identification number (BIN) 2006. Once the Customer has re-ordered checks 2007, the System displays a screen re-capping the customer's instructions 2008 or displays a screen that the request has been canceled if requested by customer 2010. If the request was not canceled, the System then sends a

request message to the host **2012**. If the log was unsuccessful by host, then the System displays an error message **2014**. If the log was successful by host, then the System displays a confirmation message **2016**. The Check Re-order application is then terminated **2018**.

5 For the second option, Change Personal Identification Number (PIN) session, the Customer chooses the change PIN button **2024** from the Graphical User Interface. The Customer is then presented with two choices, either a screen to enter the current PIN to compare with a previous PIN **2026**; or, a display screen to enter new PIN **2028**. If a comparison **2026** is chosen, a graphical display screen is presented to enter the
10 current PIN to compare with previous PIN **2030**. If enter new PIN **2028** is selected, a graphical display screen is presented to re-enter the new PIN **2032**.

 If the PINs do not match, then a graphical display error screen is presented allowing the customer to retry **2034**. If incorrect PINs are entered five consecutive times, the System displays an error message **2036**. When the PIN is verified, the
15 System sends a message to the host via the integrator **2038** and displays a screen advising the Customer of their new PIN number **2040**.

 For the third option, Update Request session (FIG. 46) **2050**, the Customer chooses the Update Request session **2050** button from the user friendly Graphical User Interface. The System then determines if the Customer has more than one
20 account **2052**. If there is more than one account, the System displays an account selection screen to select an account **2054**. If there is only one account, the System bypasses the account selection **2056**. The System then sends an update request message to the host via the integrator **2058** and prints a statement **2060**. If the
25 statement is not received by the Customer **2062**, the System then sends another update request message to the host via the integrator **2058**. If the statement is received by the customer **2064**, the System sends and displays a confirmation message **2066**.

 For the fourth option, Give Notice session **2068**, the Customer chooses the Give Notice session button **2068** from the user friendly Graphical User Interface. The System gets the Customer Profile **2070** and disclose Give Notice process **2072**. The
30 System displays the date of notice **2074**. The System determines common amount

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2076. The System confirms the amount 2078. The System sends notice to the host via the integrator 2080. The System confirms notice has been scheduled 2082. The Give Notice session then terminates 2084.

5 For the Fifth option, Print Balance Summary session 2086, the Customer chooses the Print Balance Summary button 2086 from the user friendly Graphical User Interface. If the System determines that this is the first transaction, then the System waits for the profile 2088. If it is not the first transaction, then the Customer is prompted to re-enter their PIN 2090. The summary message request flag is set to true 2092. The System sends a summary inquiry to the host via the integrator 2094. 10 The summary message flag is set to false 2096. The System prints the balance summary 2098. The Print Balance Summary session terminates 2084.

 The Payment Processing Application (FIG. 47) is initiated when the Customer chooses the Payment Processing button 2100 from the user friendly Graphical User 15 Interface. Two options are then presented, Payment Creation 2102, and Payment Change / Cancel / Inquiry 2128.

 For the first option, Payment Creation, the System checks and waits for the profile message return to begin payment creation 2102. The System checks if available accounts are valid for making external transfers or standing orders 2104. 20 The System checks the status of the host 2106. The System displays the appropriate screens 2108, either the payee list screen, the keyboard screen, the destination account screen, or the bank route number screen. The System displays a numeric keypad screen to enter the transaction amount 2110. The System displays the source account selection screen 2112. The Systems displays two screens for entering payment date 25 2116, either the calendar screen for external transfers or the numeric keypad for standing orders. The System displays screens for entering a message and communication to attach to an authorization message 2118. The System displays a recap screen to modify information 2120. The System sends an authorization message 2122. If a time-out occurs, the System sends a reversal message 2124. The 30 Payment Processing application then terminates 2126.

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For the second option, Payment Change / Cancel / Inquiry, the System checks and waits for the profile message return to begin the payment change / cancel / inquiry process 2128. The System sends a list of pending payment messages 2130. If there is an error, then the System displays an error screen 2132. If there is no error, the
5 System displays the appropriate screens 2134, either the no transfers screens if there is no pending payment, or the detailed screen for one pending payment, with the ability to use the paging mechanism if there is more than one payment, then go to the detailed screen. If the Customer selects a pending payment, then no further processing is necessary 2136. If the Customer cancels a payment, then the System
10 sends an authorization message 2138. If the Customer changes a payment, then their System displays a screen to enter the change, then sends an authorization message 2140. If a time-out occurs, the System sends a reversal message 2142. The Payment Processing application then terminates 2126.

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What is claimed is:

1. A method for providing remote access to financial services comprising the steps of:
 - a) providing at least one business host;
 - b) selectively electronically linking a server to the business host; and
 - 5 c) selectively electronically linking at least one automated teller machine (ATM) and at least one home banking terminal to the server where a first user interface displayed on the ATM and a second user interface displayed on the home banking terminal are substantially the same.
2. A method for allowing a first user to gain remote access to financial services, the method comprising the steps of:
 - a) providing at least one business host;
 - b) selectively electronically linking a server to the business host; and
 - 5 c) selectively electronically linking a remote terminal to the server; and
 - d) displaying information on the remote terminal in a language selected by the first user during a configuring use of the remote terminal.
3. The method of claim 2 further comprising the step of displaying information on the remote terminal in a second language selected by a second user during a configuring use of the remote terminal, in which the remote terminal can distinguish between the first user and the second user during subsequent
5 accessing of financial services and display the language previously selected by that user.
4. A method for allowing a plurality of users to remotely access the financial services of at least one service provider comprising the steps of:
 - a) installing user software on a plurality of remote terminals;
 - b) configuring the user software to reflect each user's preferences;

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- 5 c) providing a uniform connection between the remote terminals to a standard international host;
- d) providing a plurality of business applications resident on the standard international host, in which the configuration of each of the applications controlled at the standard international host;
- 10 e) linking the standard international host to the service provider;
- f) providing secure communication between the user, the standard international host and the service provider;
- g) providing enhanced error detection and correction for communications between the user, the standard international host and the service provider; and
- 15 h) providing data compression for communications between the user, the standard international host and the service provider.

5. The method of claim 4 in which the step of configuring the user's software further comprises the step of selecting a language.

6. A method for performing financial transactions from a location remote a business host comprising the steps of:

- a) providing a automated teller machine (ATM) having a first user interface;
- 5 b) installing user software on a remote terminal, the remote terminal having a second user interface that is substantially identical to the first user interface;
- c) configuring the user interfaces to display data in a language selected by a user;
- 10 d) establishing an electronic link between the remote terminal and a server; and
- e) establishing an electronic link between the server and a business host.

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7. The method of claim 6 further comprising the step of authenticating the identity of a user by comparing a personal identification number (PIN) of a user with a PIN resident on the server.
8. The method of claim 6 further comprising the step of encrypting and transmitting data between the remote terminal and the server.
9. The method of claim 6 in which the step of installing user software on a remote terminal is performed by installing the software on a personal computer.
10. The method of claim 6 in which the step of installing user software on a remote terminal is performed by installing the software on a personal data assistant.
11. The method of claim 6 further comprising the step of performing a financial transaction.
12. The method of claim 11 in which the step of performing a financial transaction is performed by editing a payee list.
13. The method of claim 11 in which the step of performing a financial transaction is performed by authorizing a direct debit.
14. The method of claim 11 in which the step of performing a financial transaction is performed by deleting a direct debit.
15. The method of claim 11 in which the step of performing a financial transaction is performed by purchasing a mutual fund.

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16. The method of claim 11 in which the step of performing a financial transaction is performed by selling a mutual fund.
17. The method of claim 11 in which the step of performing a financial transaction further comprises the steps of:
 - a) selecting a mutual fund; and
 - b) reviewing a mutual fund.
18. The method of claim 11 in which the step of performing a financial transaction is performed by reviewing account information.
19. The method of claim 11 in which the step of performing a financial transaction is performed by reviewing securities information.
20. The method of claim 11 in which the step of performing a financial transaction is performed by generating a transaction journal.
21. The method of claim 11 in which the step of performing a financial transaction is performed by transferring assets from a first account selected from a plurality of accounts to second account selected from the plurality of accounts.
22. The method of claim 21 further comprising the step of exchanging the assets of the first account to a currency consistent with the second account.
23. The method of claim 11 in which the step of performing a financial transaction is performed by ordering checks.
24. The method of claim 11 in which the step of performing a financial transaction is performed by printing an account statement.

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25. The method of claim 11 in which the step of performing a financial transaction is performed by printing a balance summary.
26. The method of claim 11 in which the step of performing a financial transaction is performed by processing a payment.
27. The method of claim 6 in which the step of establishing an electronic link between the remote terminal and a server further comprises the steps of:
- a) sending an authorizing message to the server;
 - b) sending the authorizing message to a bank security server; and
 - c) sending the authorizing message to a bank hardware encryption device.
28. The method of claim 6 in which the step of establishing an electronic link between the server and a service provider further comprises the steps of:
- a) sending an authorizing message to the business host; and
 - b) sending a message from the business host to the server, in which the message authorizes hookup.
29. The method of claim 6 further comprising the step of sending a marketing message from the business host to the remote terminal.
30. A system for providing remote access to financial services comprising:
- a) at least one business host;
 - b) a server selectively electronically linked to the business host;
 - c) at least one automated teller machine (ATM) having a first user interface displayed thereon, in which the ATM is electronically linked to the server; and
 - d) at least one home banking terminal having a second user interface displayed thereon, in which the home banking terminal is

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10 electronically linked to the server and in which the first and second user interfaces are substantially the same.

31. A system for providing remote access to financial services comprising:

- 5
- a) at least one business host;
 - b) a server selectively electronically linked to the business host; and
 - c) at least one remote terminal which displays information, the terminal being selectively electronically linked to the server, in which each time the system is operated by a first user, the information is displayed in a first language selected by the first user during a configuring use of the system.

32. The system of claim 31 in which each time the system is operated by a second user, the information is displayed in a second language selected by the second user during a configuring use of the remote terminal and in which the remote terminal can distinguish between the first user and the second user during operations of the system and displays the language previously selected by that user.

5

33. A system for providing remote access to financial services comprising:

- 5
- a) at least one business host;
 - b) a server selectively electronically linked to the business host;
 - c) at least one automated teller machine (ATM) electronically linked to the server in which the ATM displays a first user interface in a language selected by a user;
 - d) at least one home banking terminal further comprising a user supplied platform and user software installed thereon in which the home banking terminal displays a second user interface in the language;
 - e) in which the first and second user interfaces are substantially identical.
- 10

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34. The system of claim 33 in which the user software further comprises:

- a) a runtime application;
- b) an installation program;
- c) a configuration program; and
- d) a help program.

5

35. The system of claim 33 in which the server further comprises:

- a) a packet assembler/disassembler;
- b) a session controller;
- c) a customer activated terminal (CAT) terminal protocol interface;
- d) a terminal application front end;
- e) a CAT session manager;
- f) a CAT common integrator;
- g) an activity log server;
- h) a secure encryption server;
- i) a host message normalizer;
- j) an X.25 normalizer; and
- k) at least one business application.

5

10

36. The system of claim 33 in which the electronic links between the server and the business host, the ATM and the remote terminal are secure.

37. The system of claim 33 in which the electronic links between the server and the business host, the ATM and the remote terminal carry data transmissions in which at least some of the data transmissions are compressed and in which enhanced error detection and correction are used to preserve the integrity of the data being transmitted.

5

38. The system of claim 33 further comprising a router.

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39. The system of claim 33 in which the router is a small financial CAT gateway.
40. The system of claim 33 in which there are at least two business hosts where a first of the business hosts is a user's home institution and the second of the business hosts is an outside business provider.
41. The system of claim 35 in which the business application allows the user to edit a payee list.
42. The system of claim 35 in which the business application allows the user to authorize a direct debit.
43. The system of claim 35 in which the business application allows the user to delete a direct debit.
44. The system of claim 35 in which the business application allows the user to purchase a mutual fund.
45. The system of claim 35 in which the business application allows the user to sell a mutual fund.
46. The system of claim 35 in which the business application allows the user select and review a mutual fund.
47. The system of claim 35 in which the business application allows the user to review account information.
48. The system of claim 35 in which the business application allows the user to review securities information.

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49. The system of claim 35 in which the business application allows the user to generate a transaction journal.
50. The system of claim 35 in which the business application allows the user to transfer assets from a first account selected from a plurality of accounts to second account selected from the plurality of accounts.
51. The system of claim 50 in which the business application allows the user to exchange the assets of the first account to a currency consistent with the second account.
52. The system of claim 35 in which the business application allows the user to order checks.
53. The system of claim 35 in which the business application allows the user to print an account statement.
54. The system of claim 35 in which the business application allows the user to print a balance summary.
55. The system of claim 35 in which the business application allows the user to process a payment.

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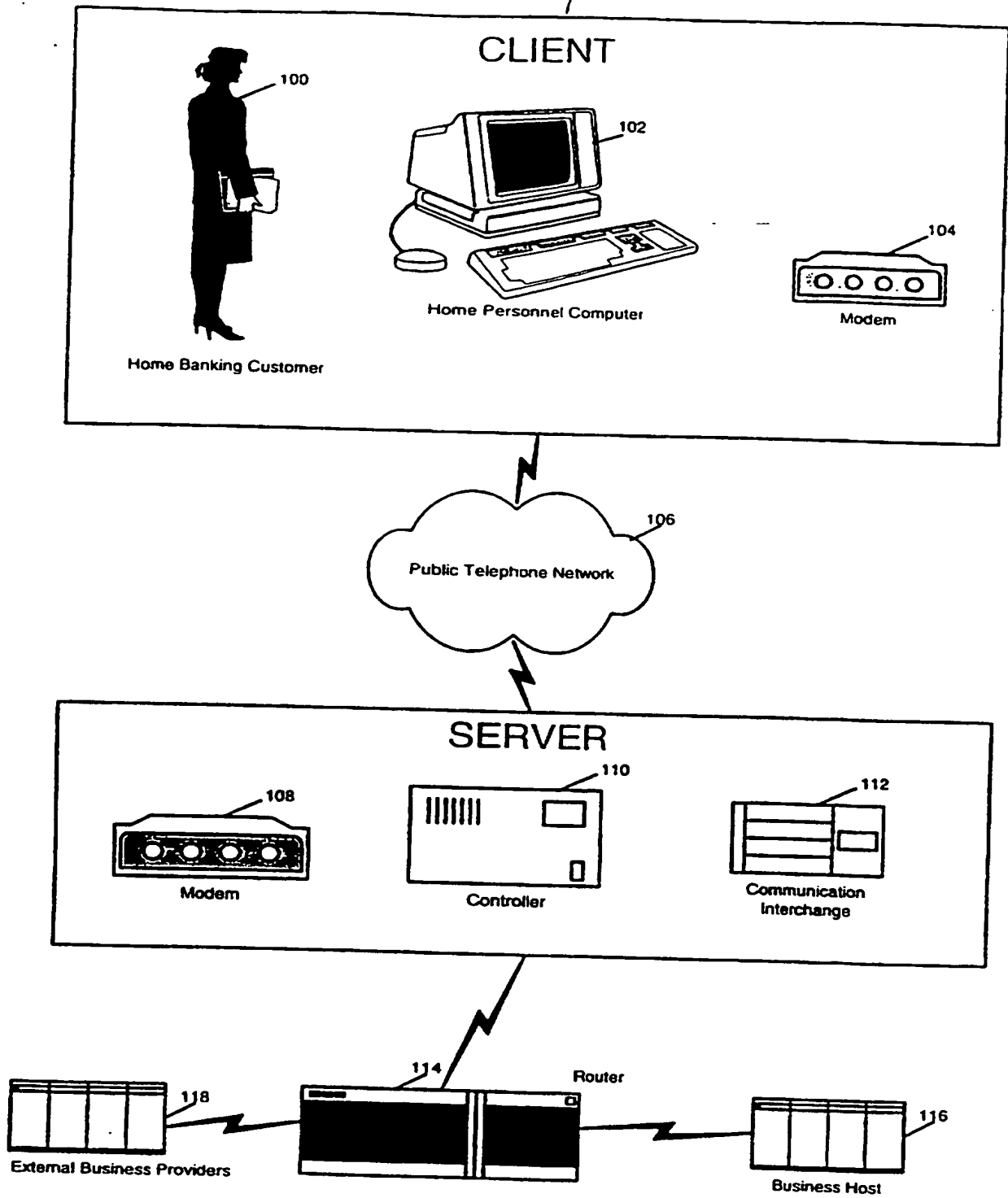


FIG. 1

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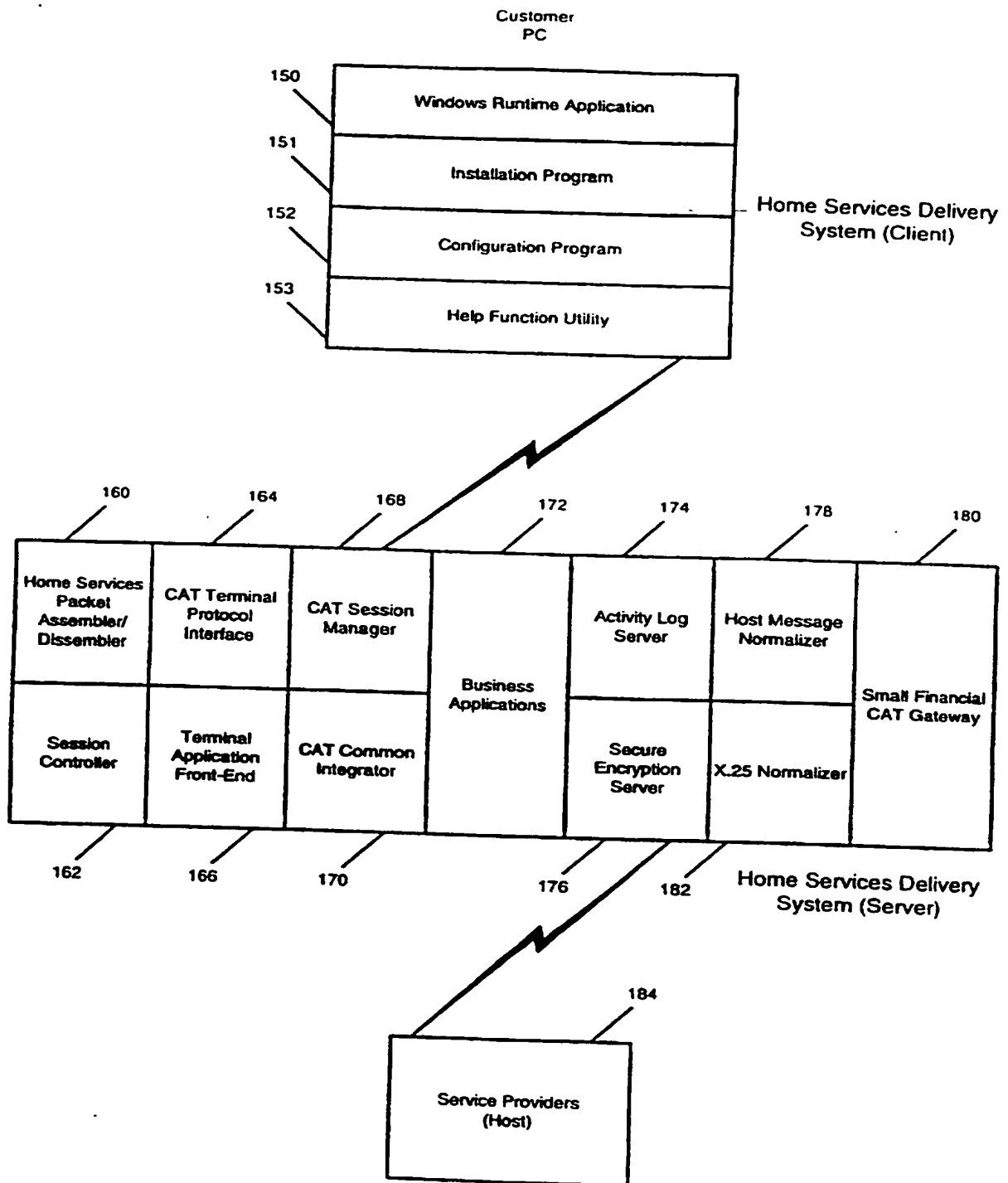


FIG. 2

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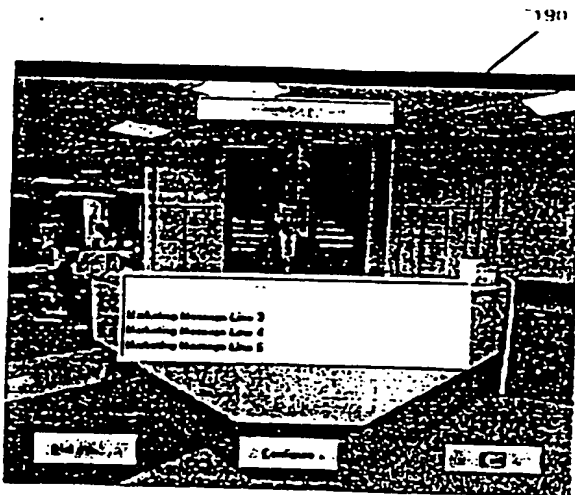


FIG. 3A

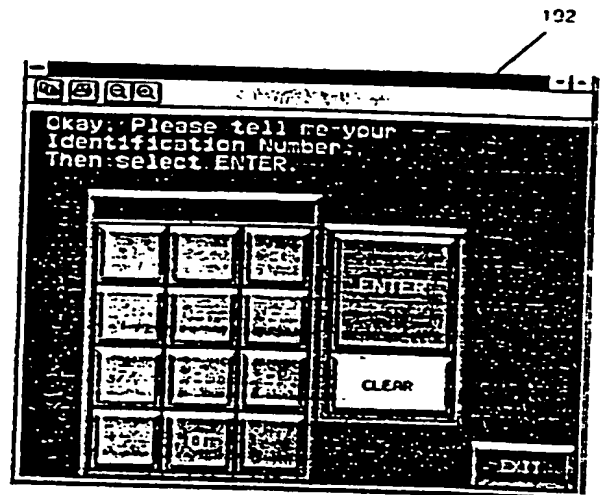


FIG. 3B

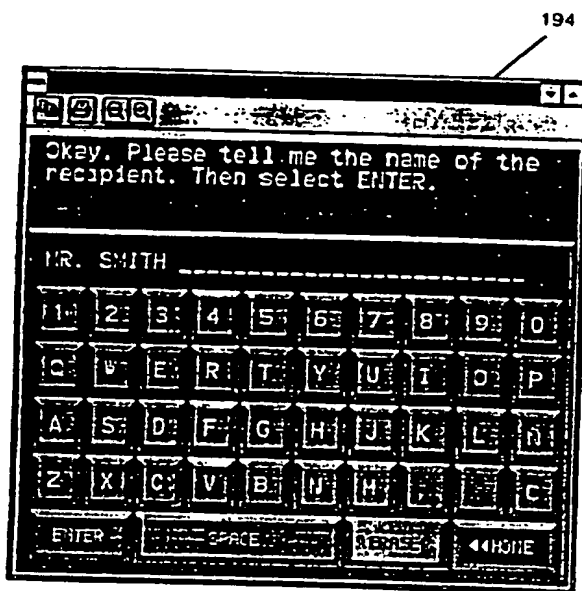


FIG. 3C

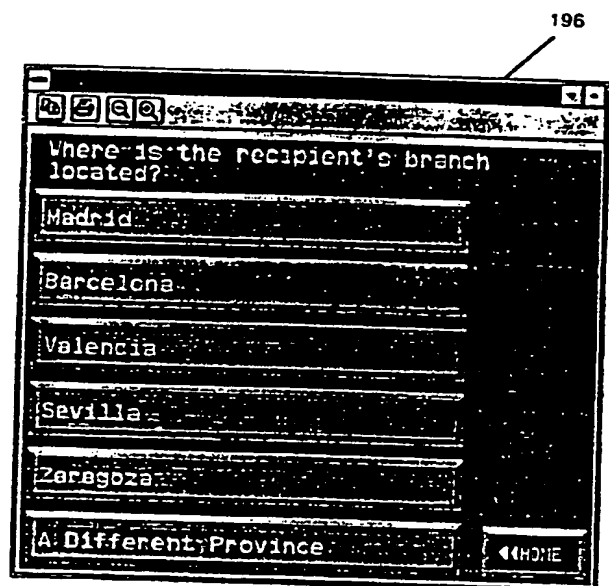


FIG. 3D

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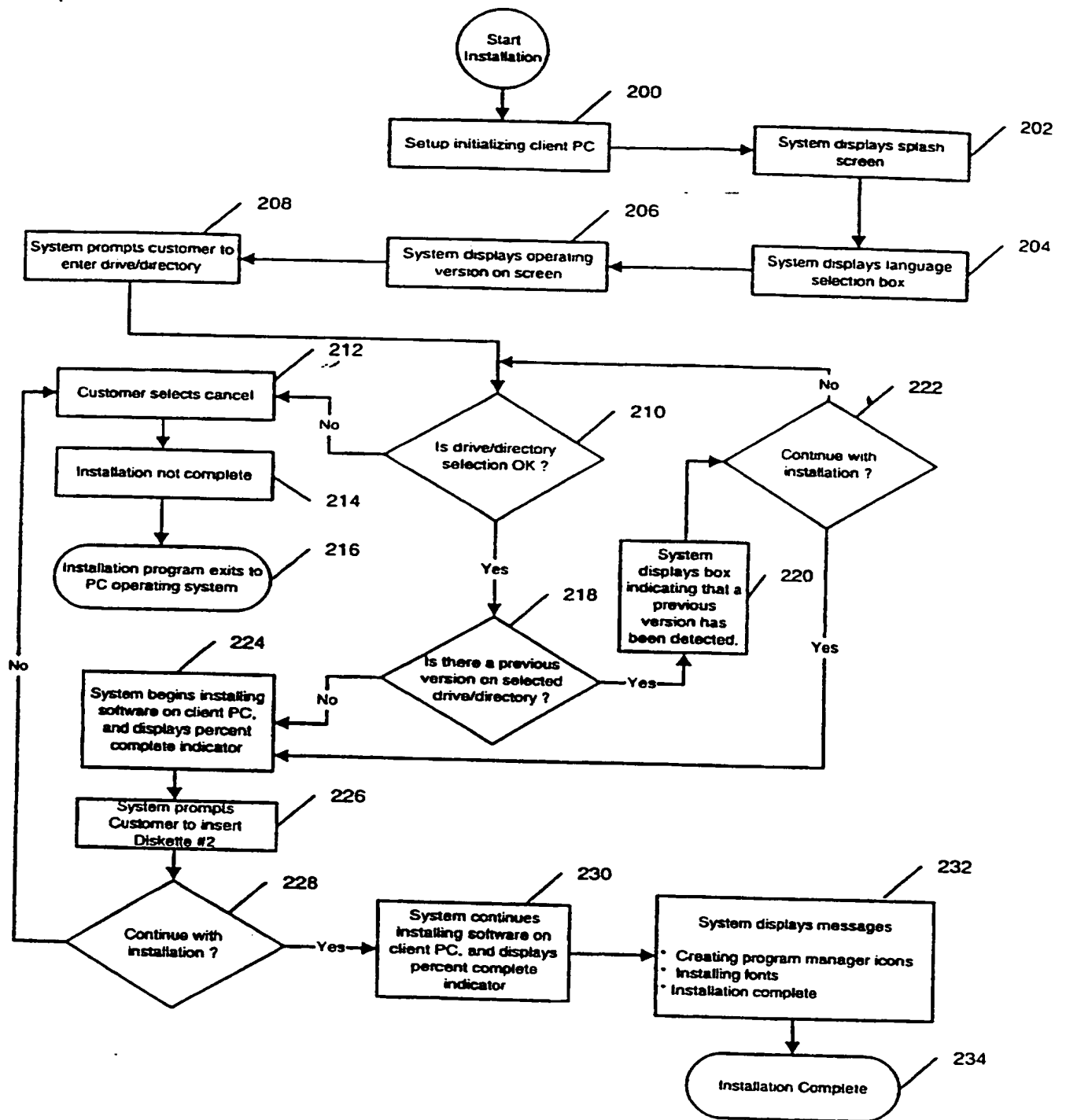


FIG. 4

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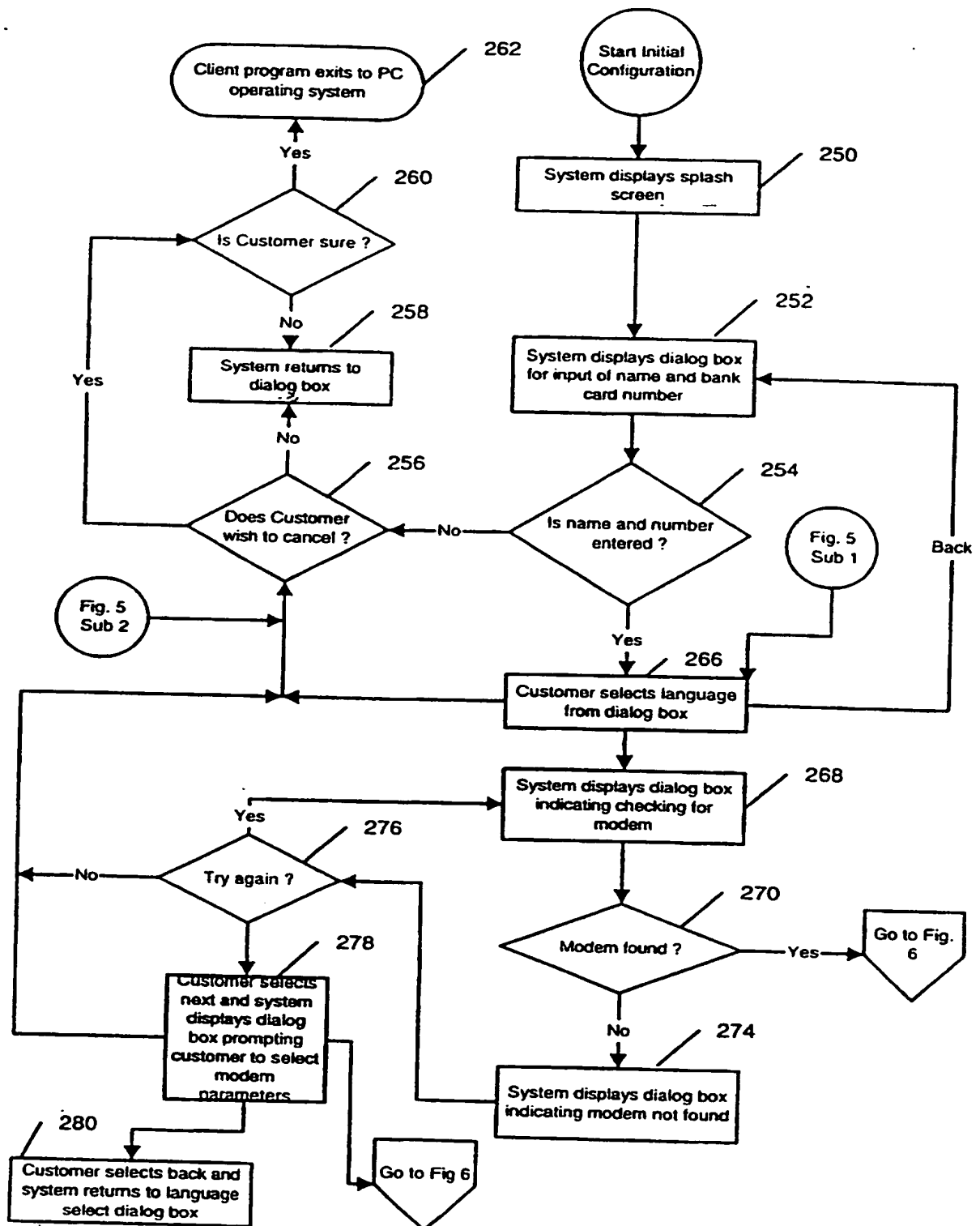


FIG. 5

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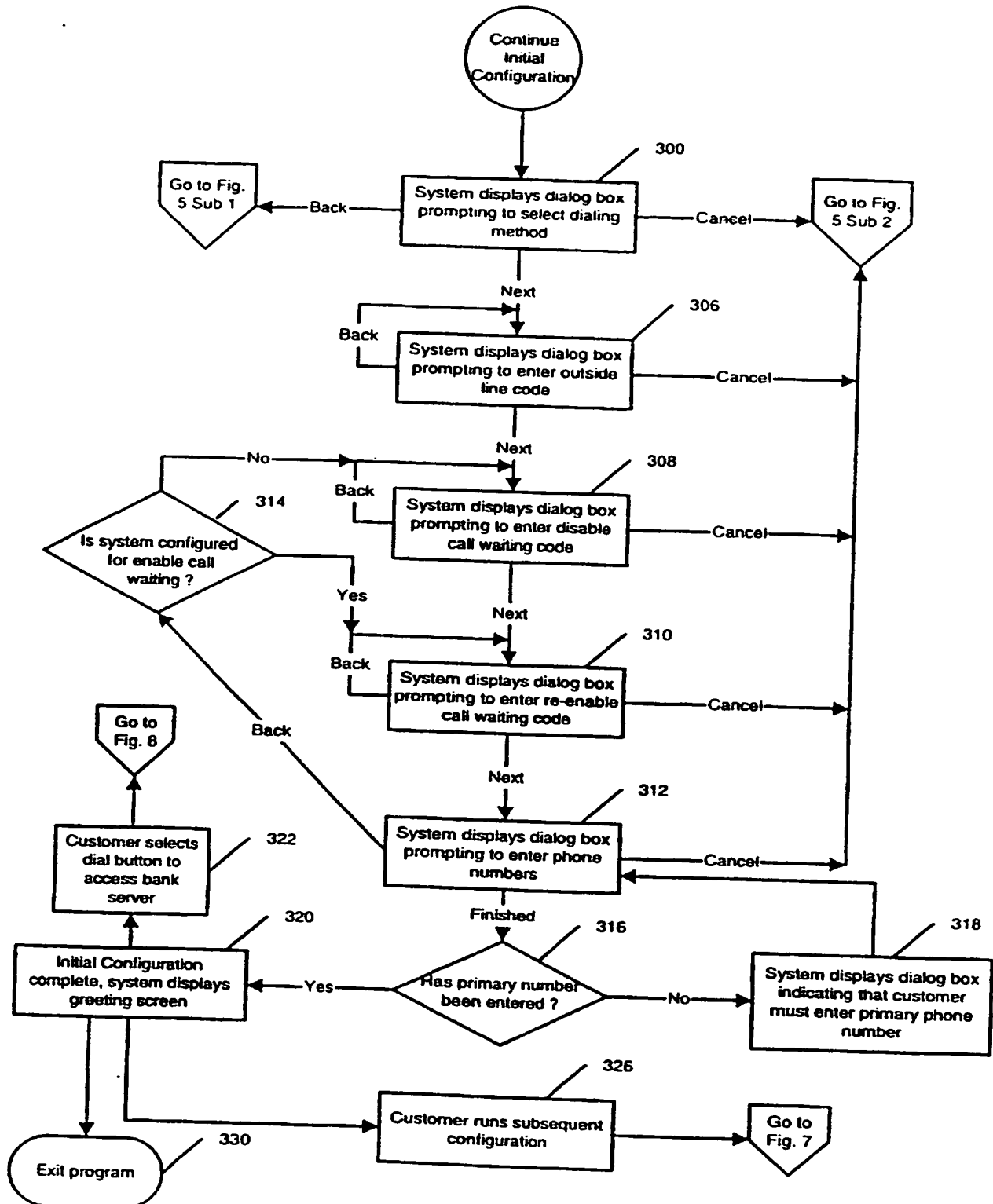


FIG. 6

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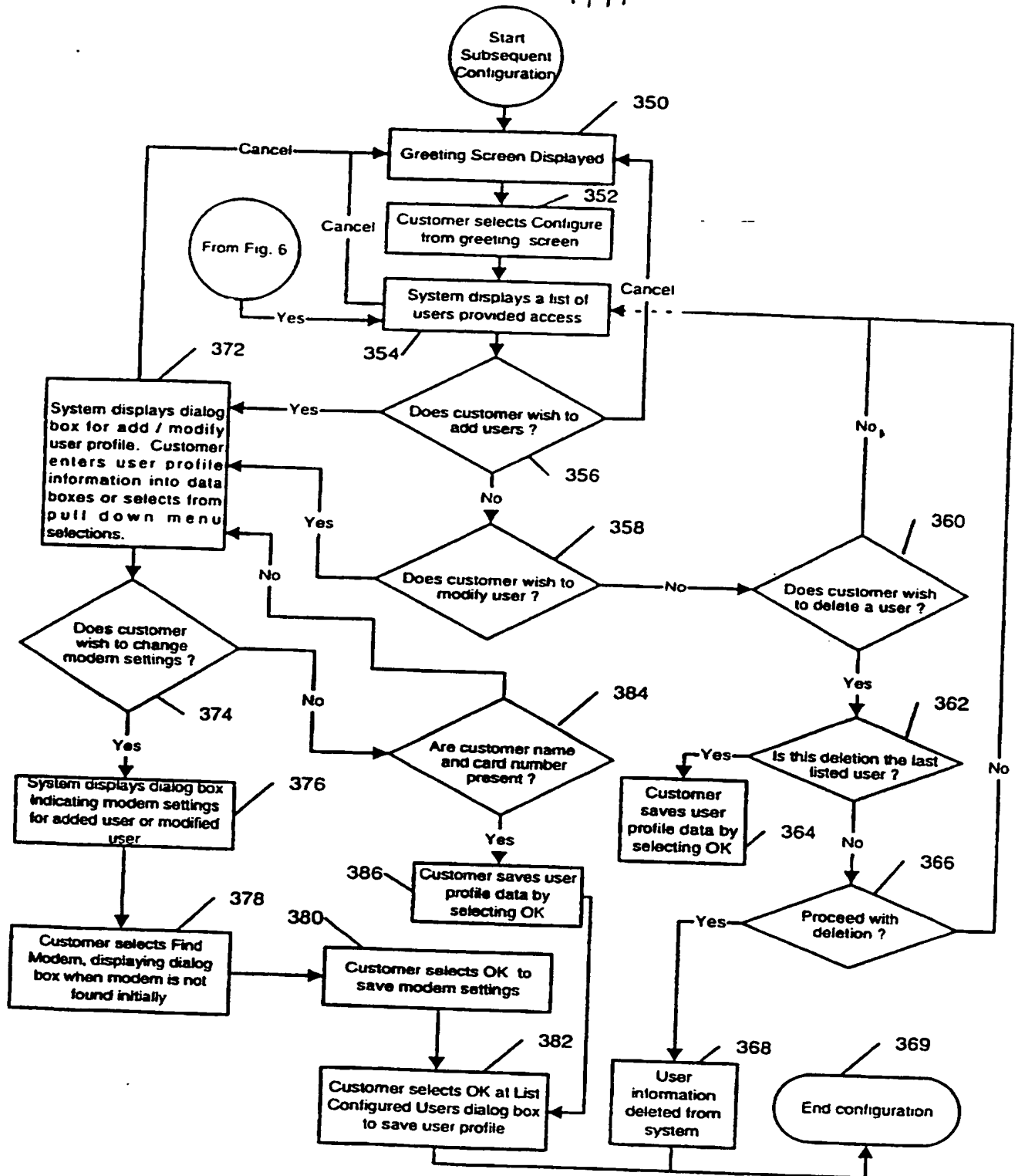


FIG. 7

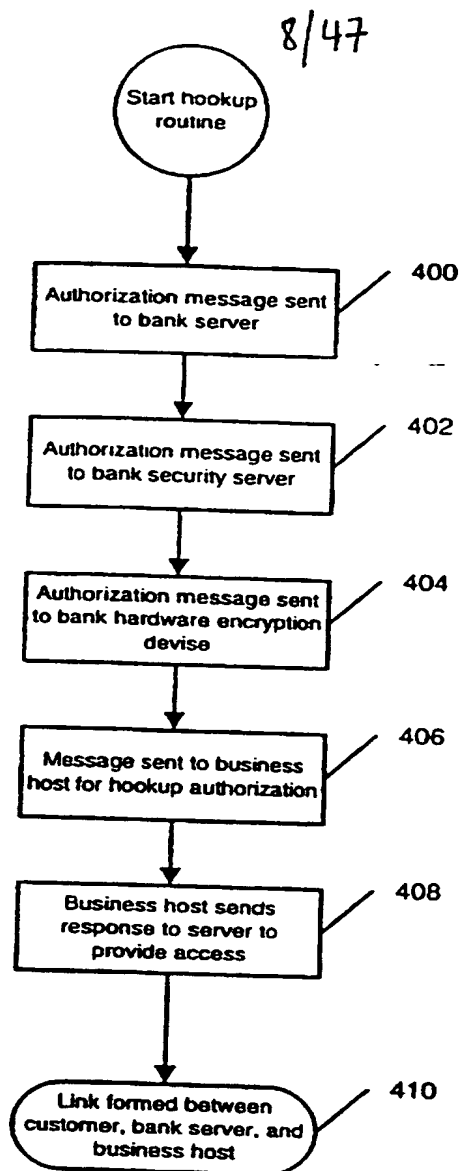


FIG. 8

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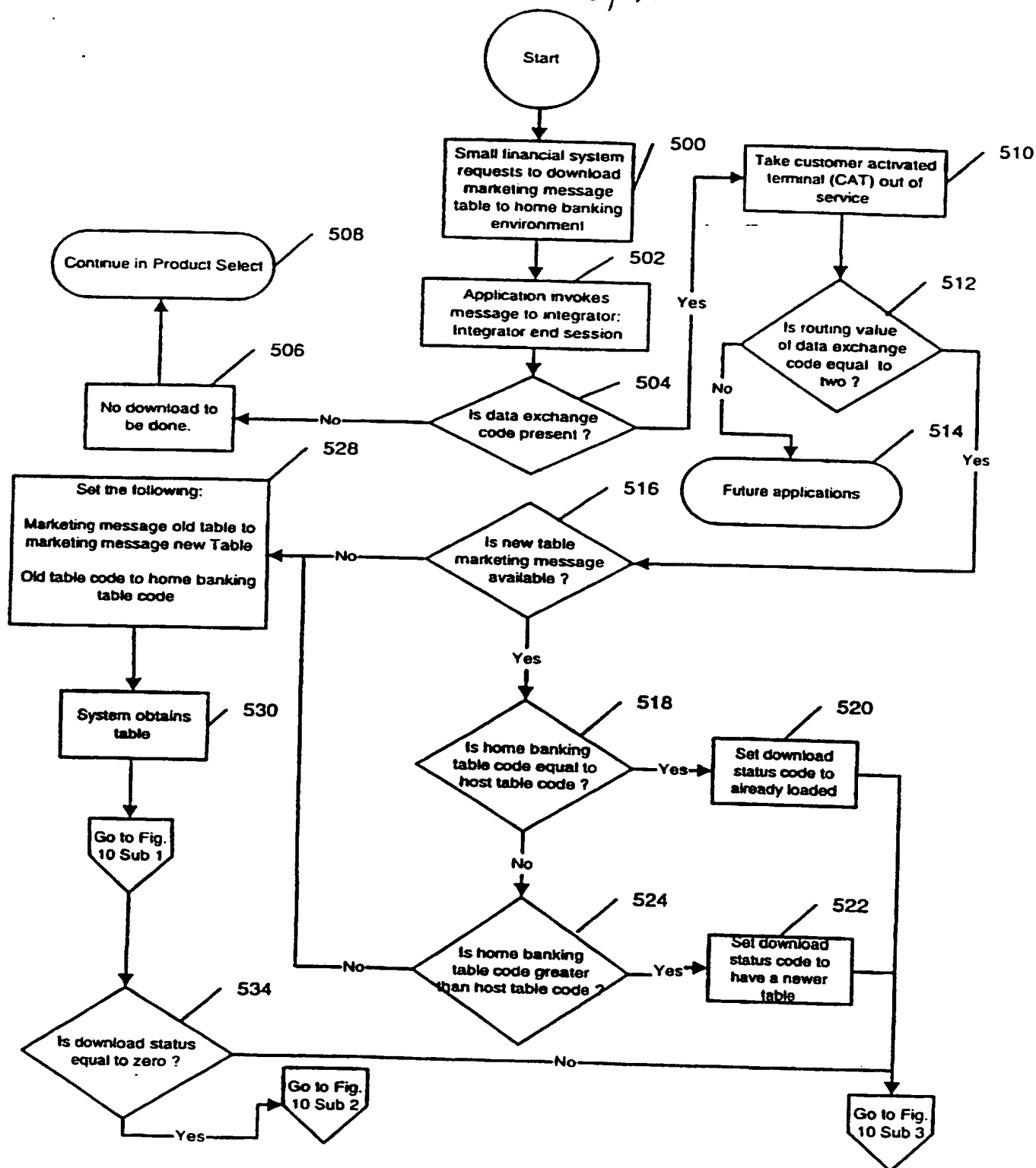


FIG. 9

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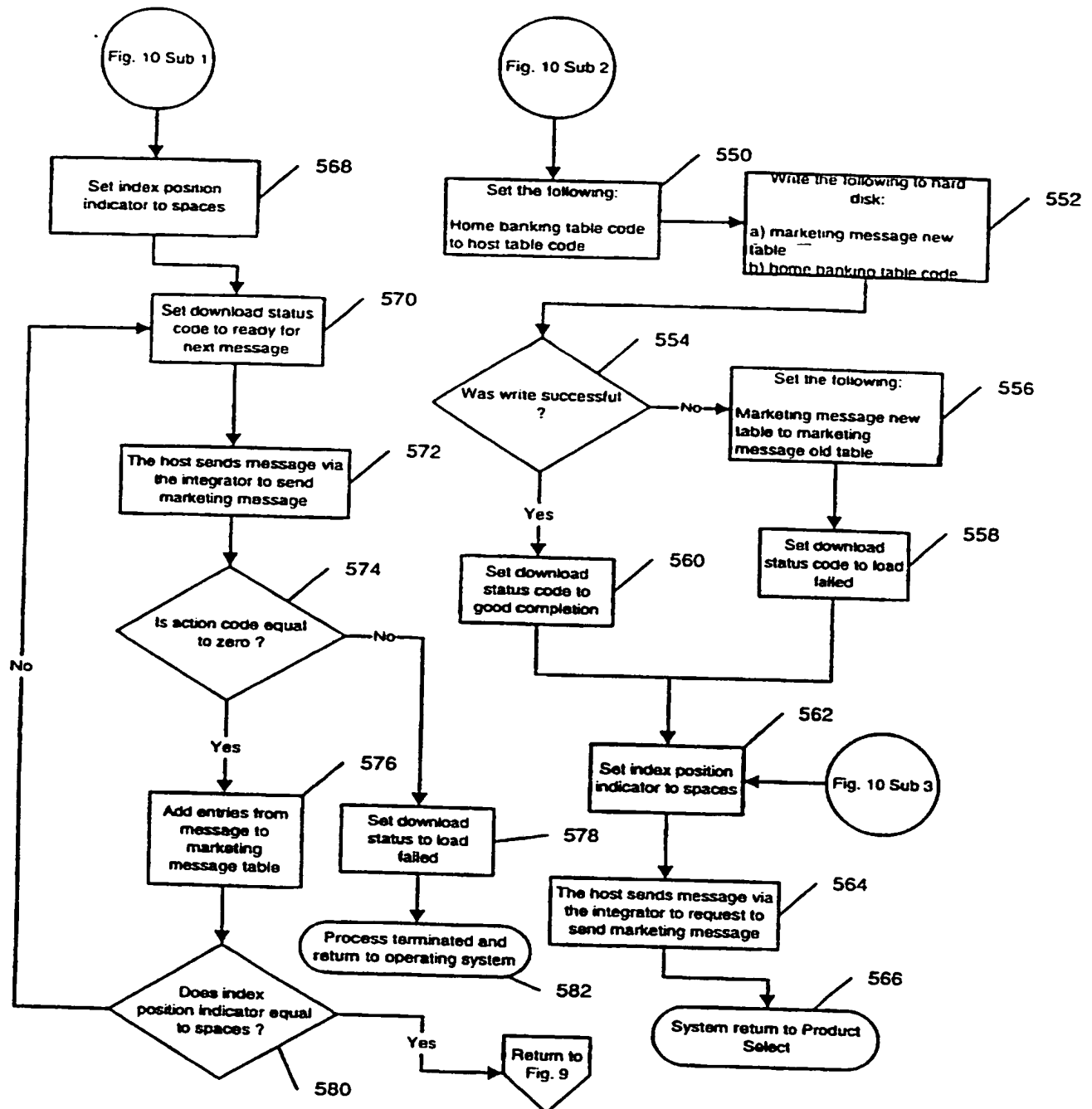
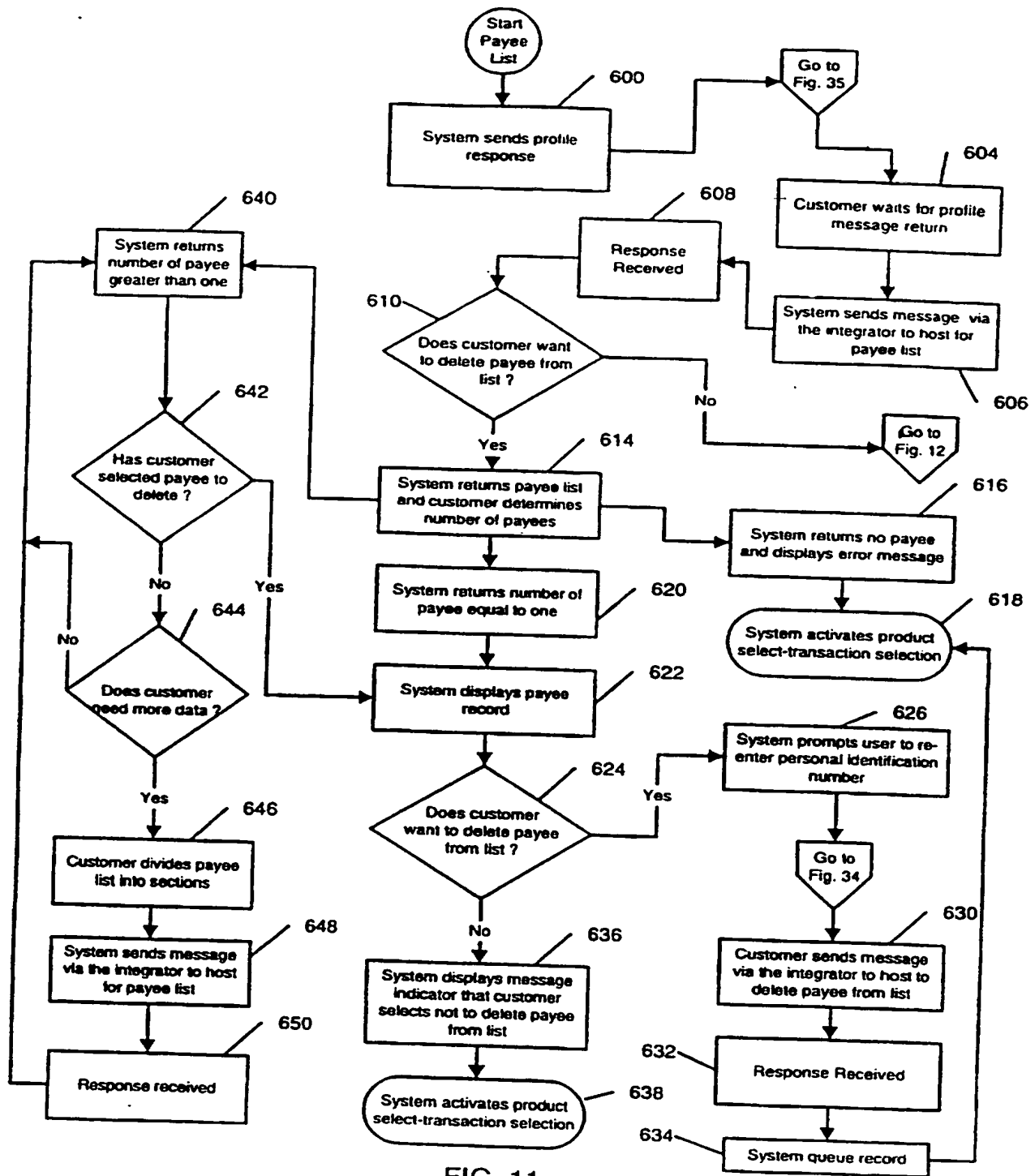


FIG. 10

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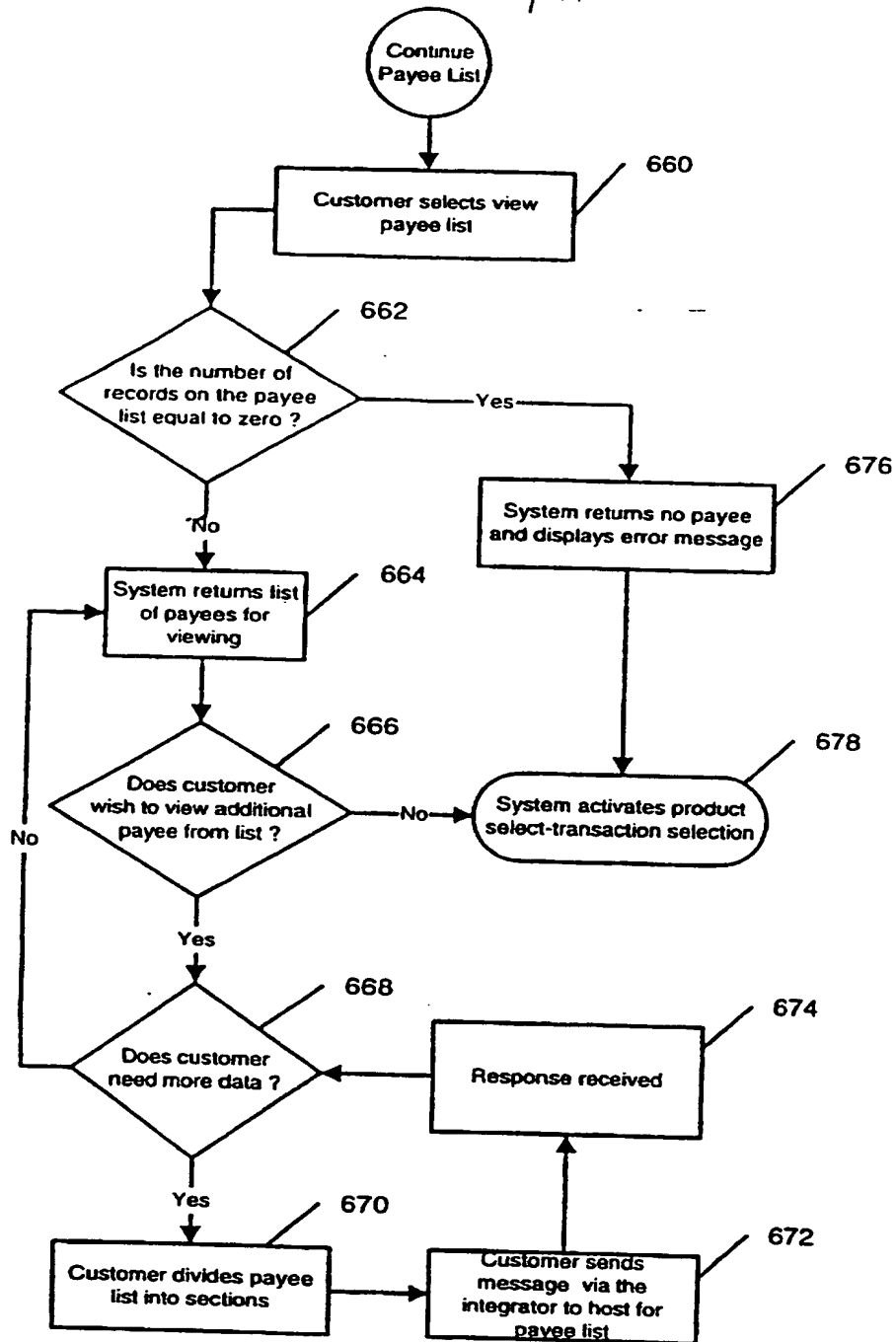


FIG. 12

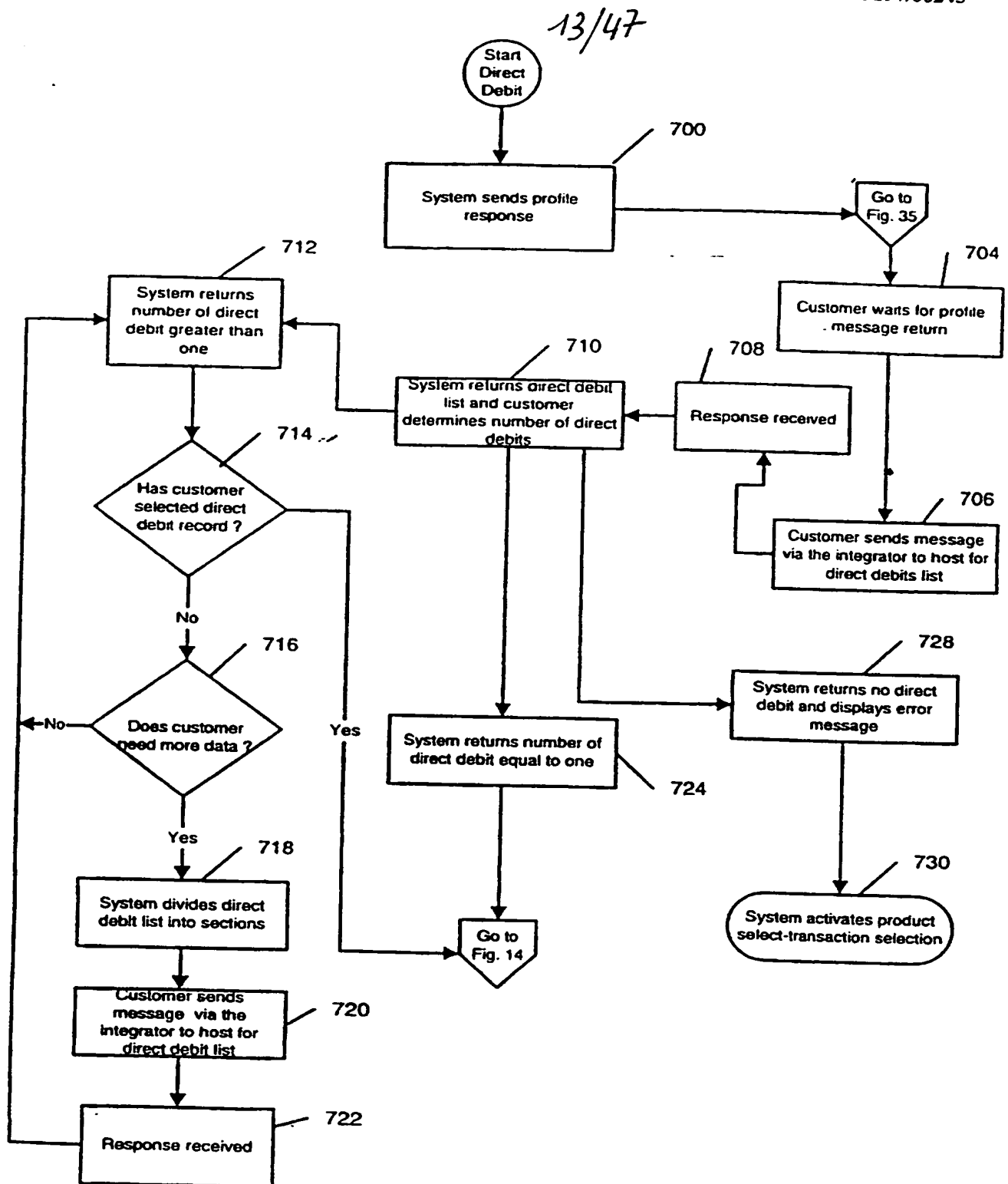


FIG. 13

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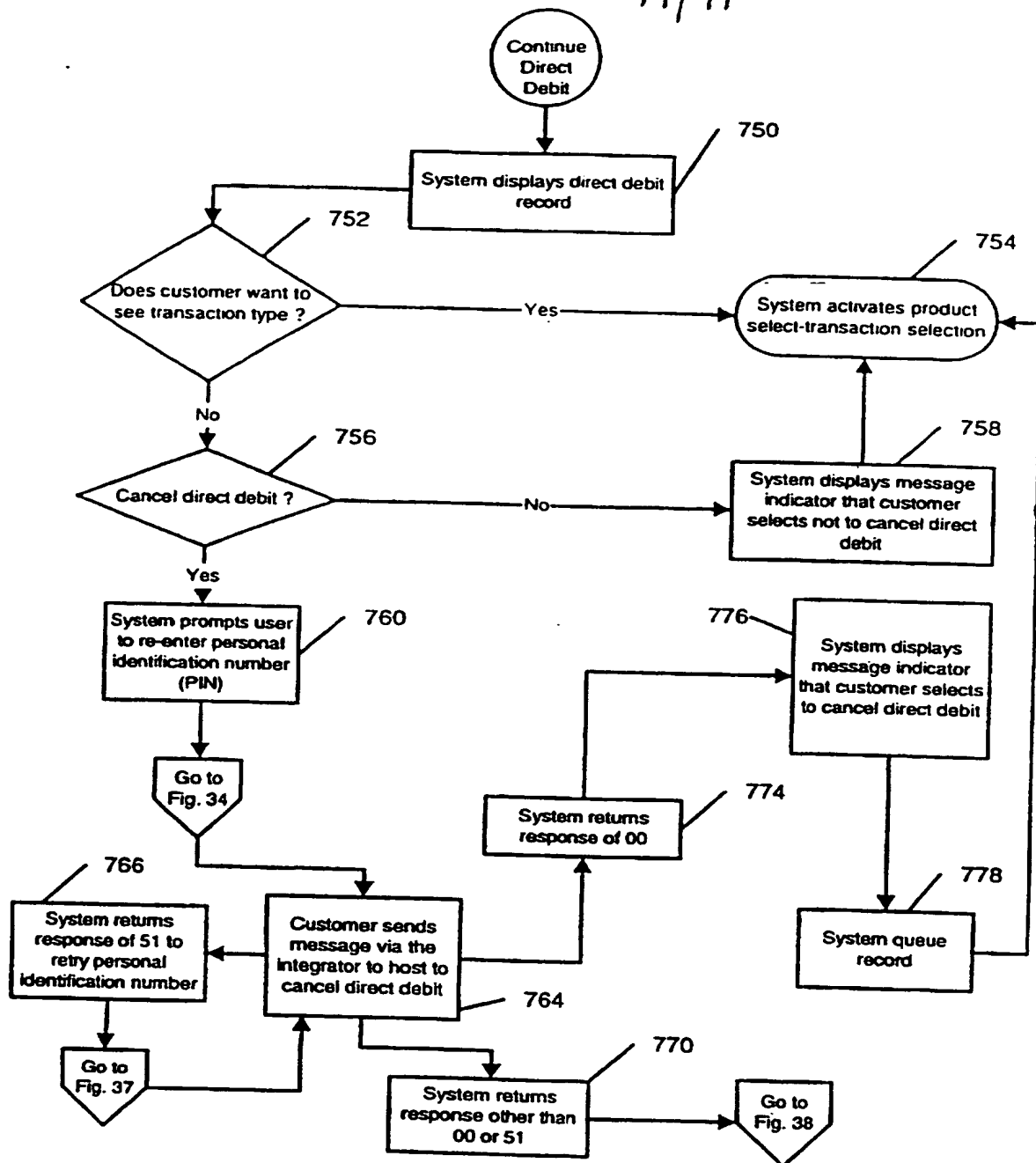
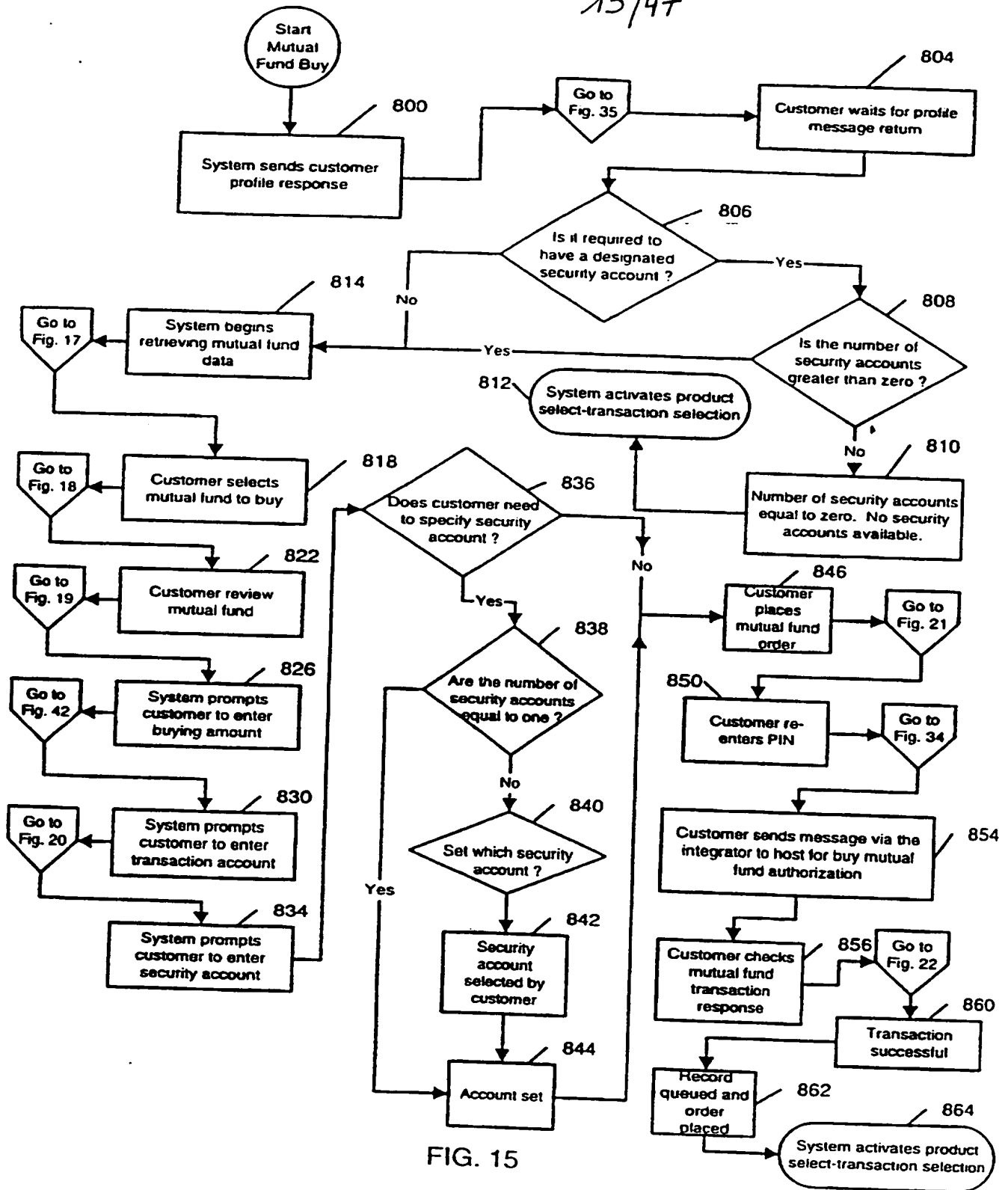


FIG. 14

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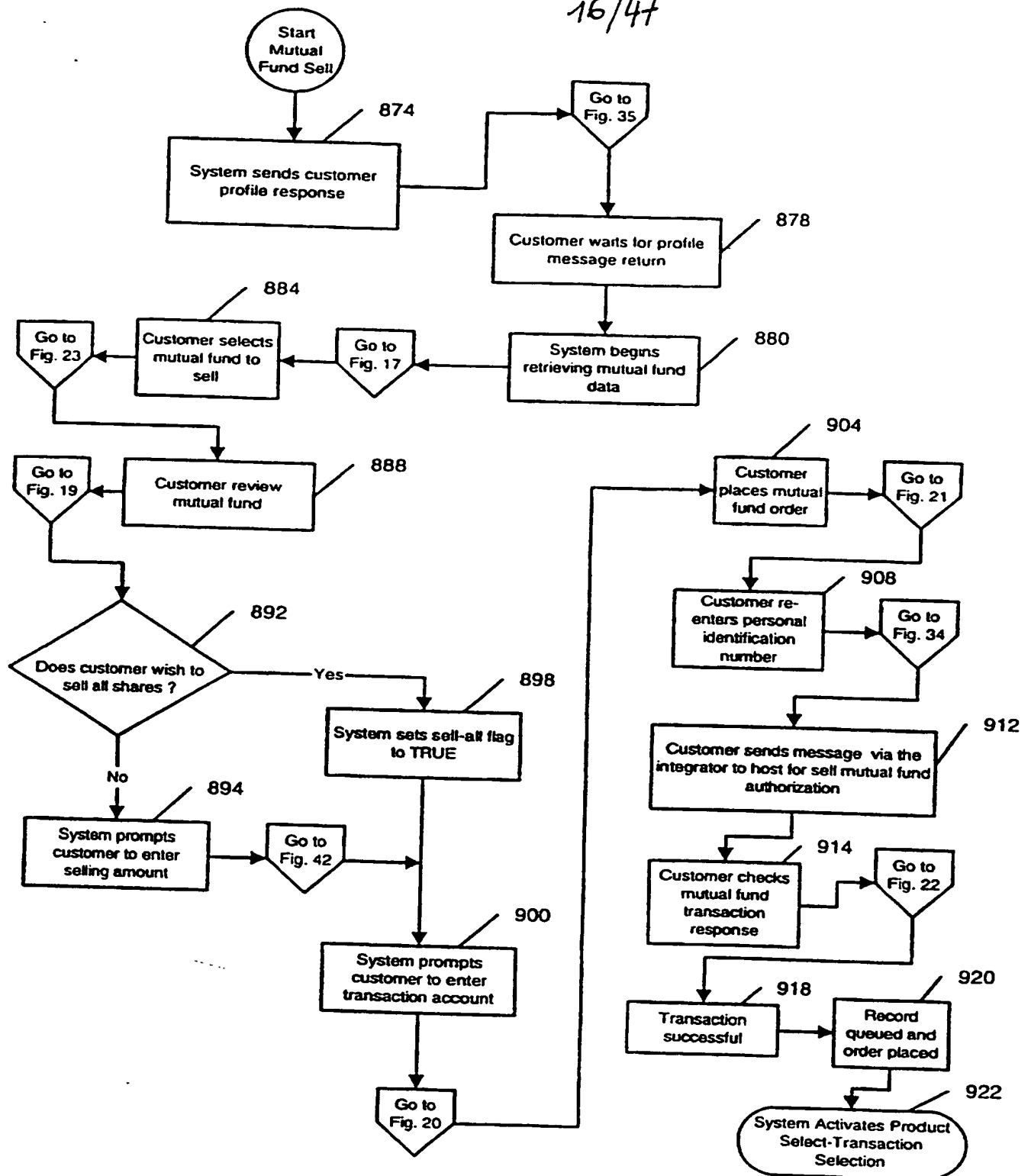


FIG. 16

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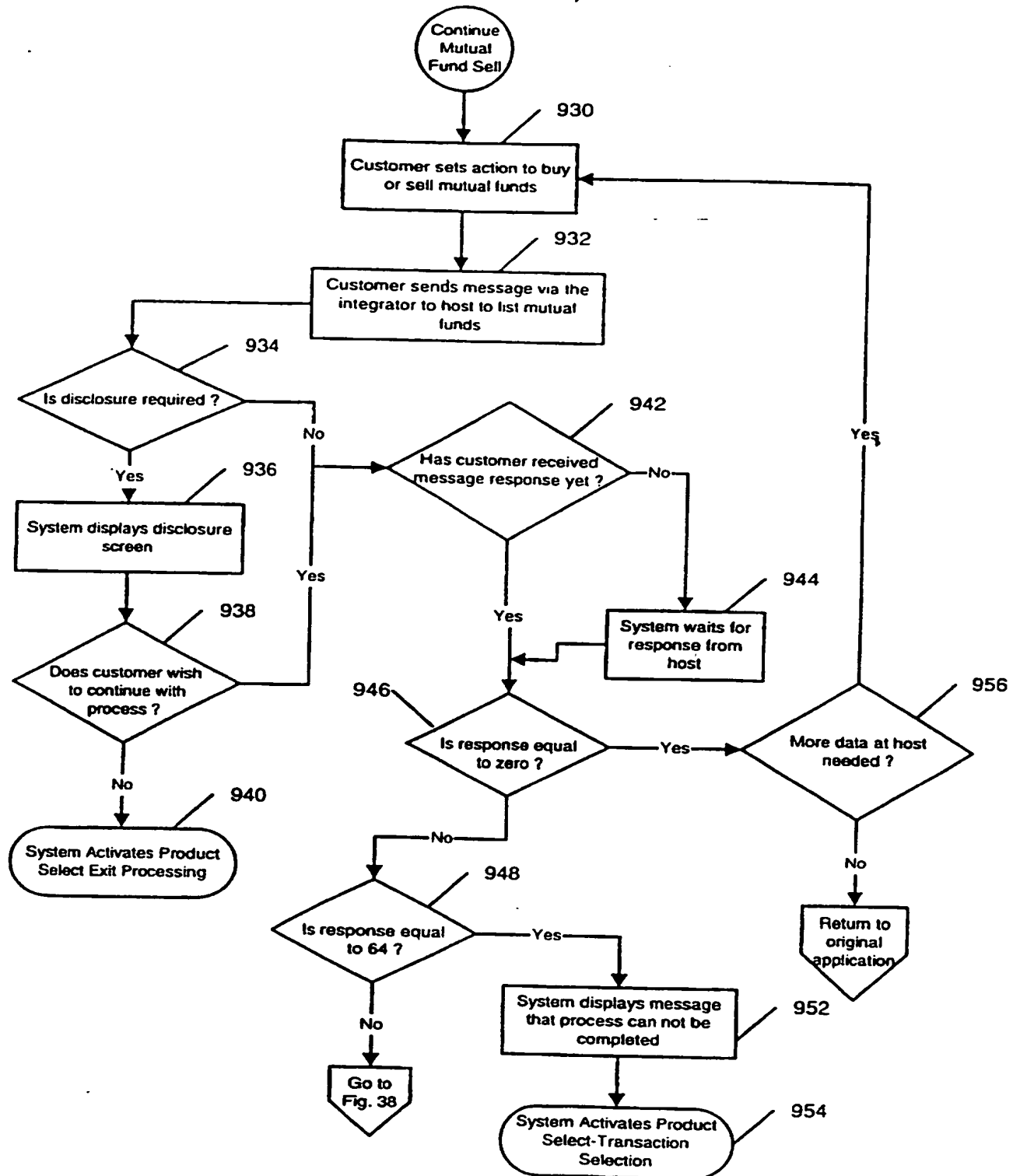


FIG. 17

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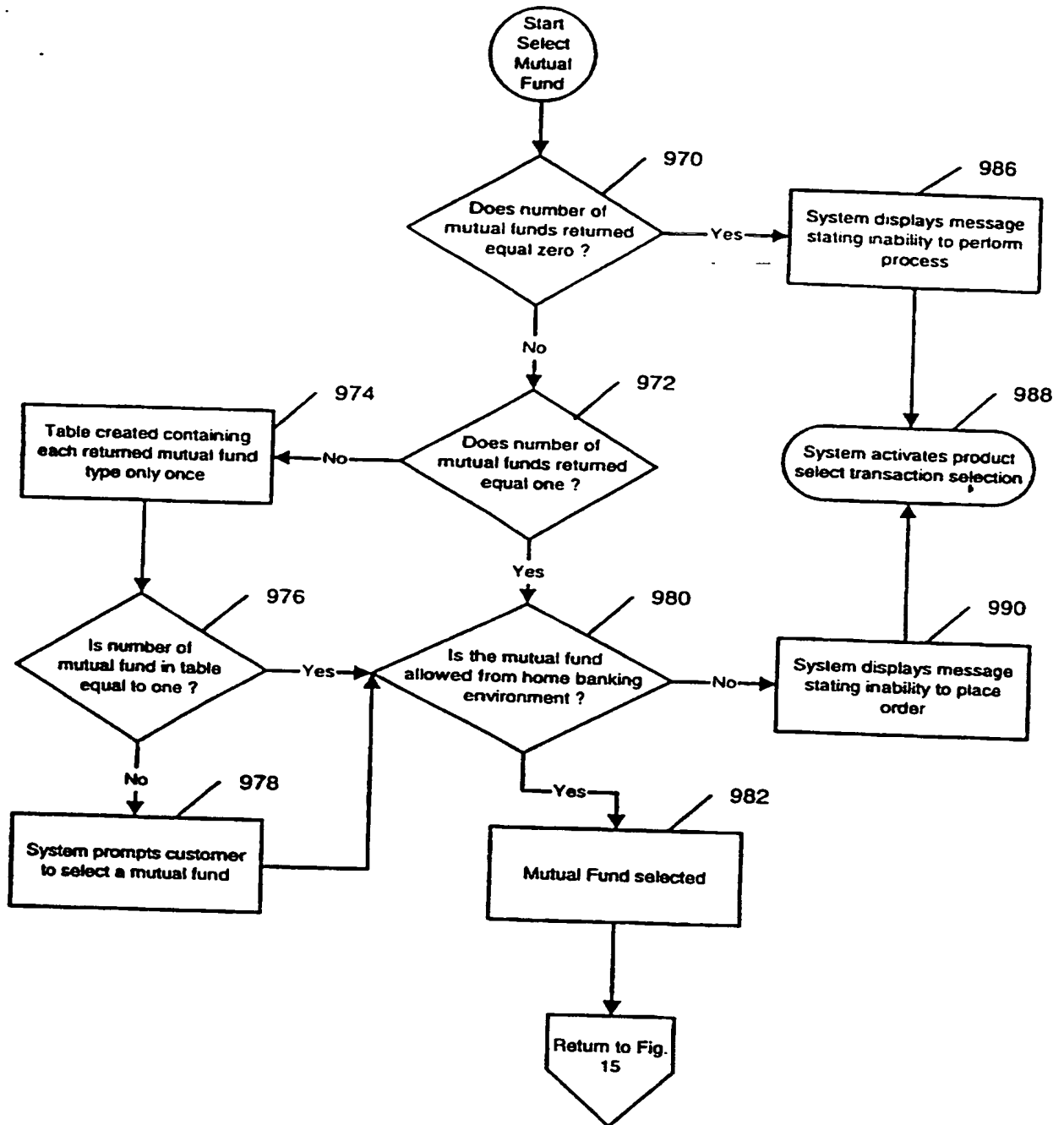


FIG. 18

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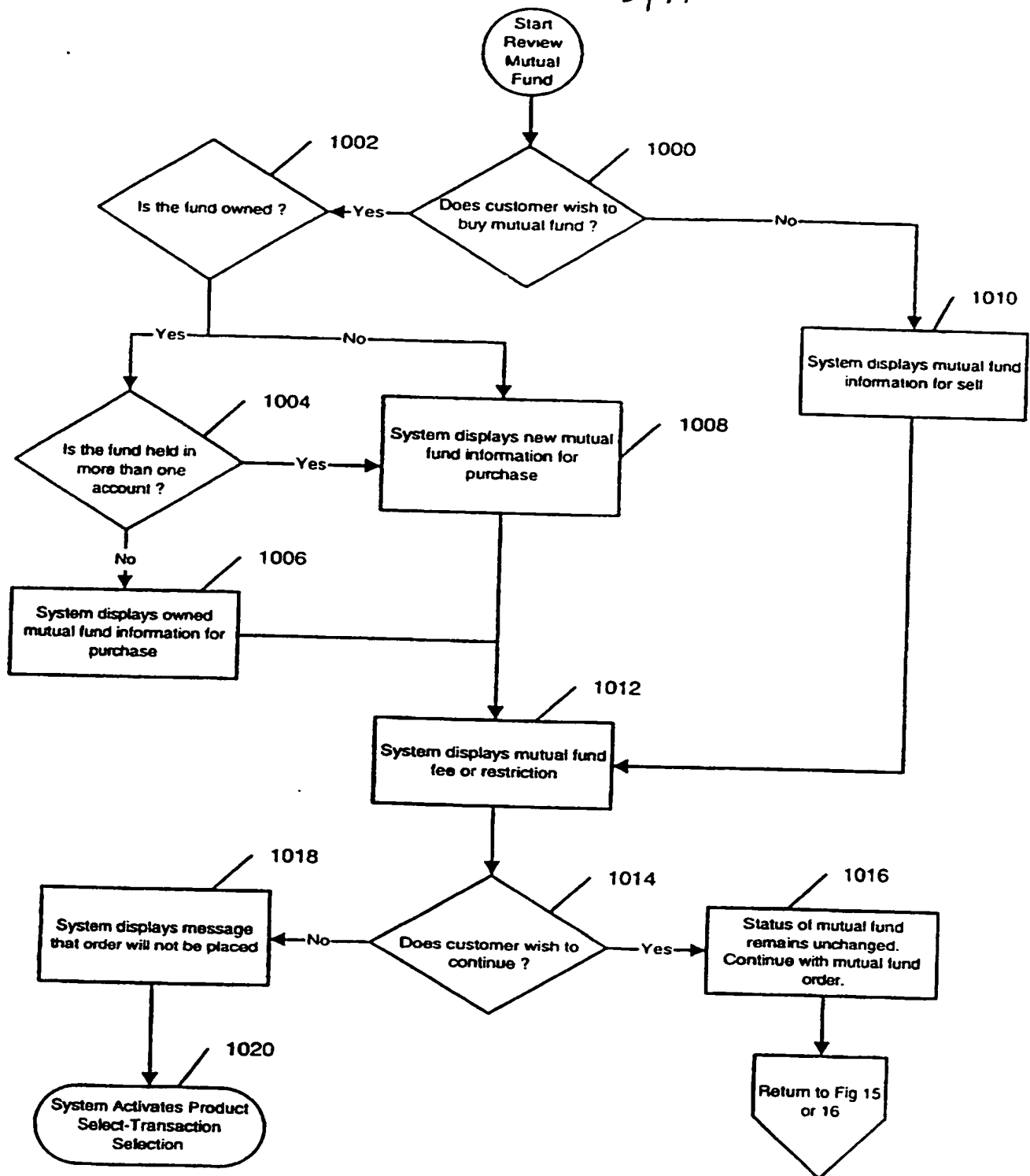


FIG. 19

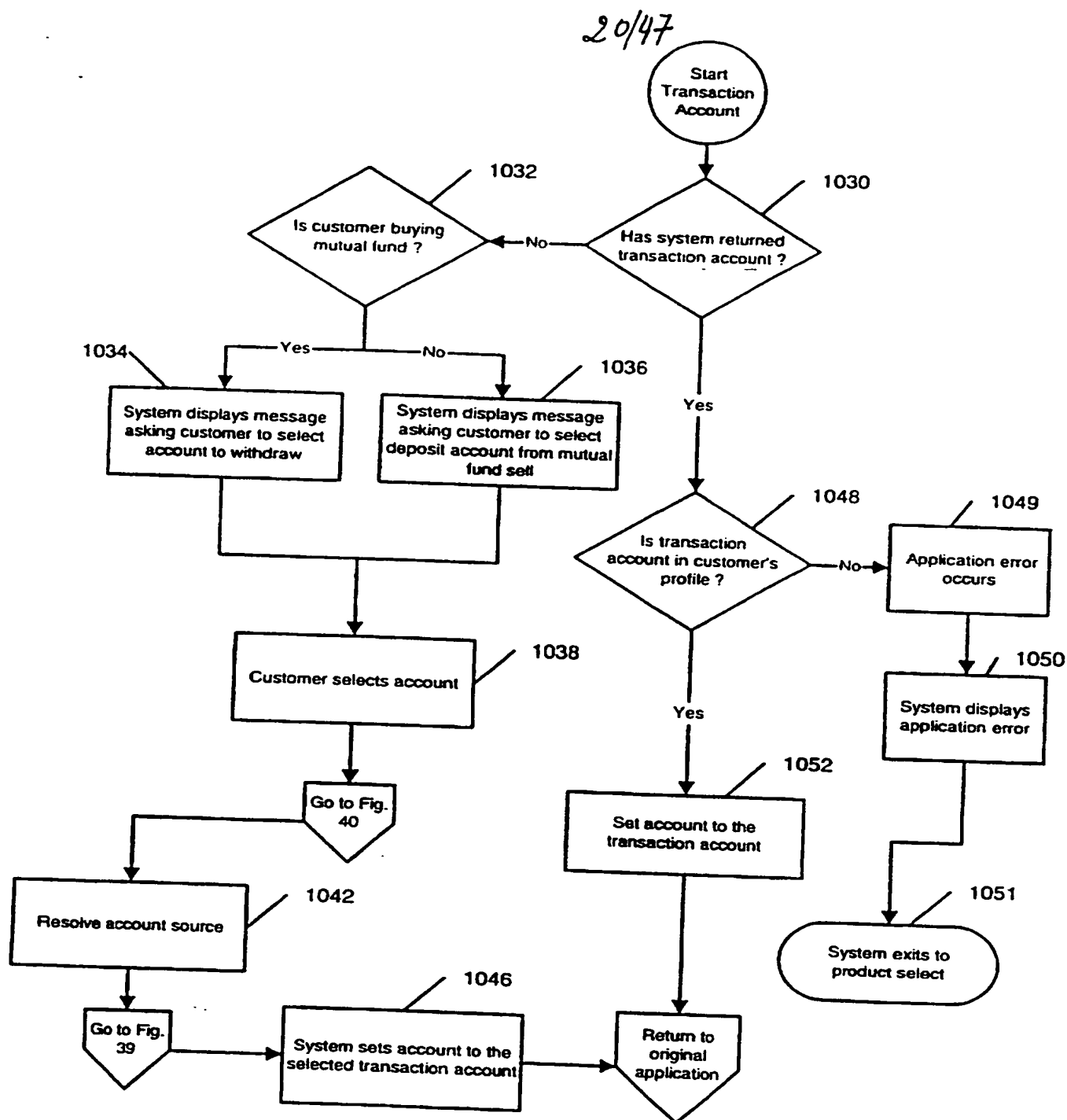


FIG. 20

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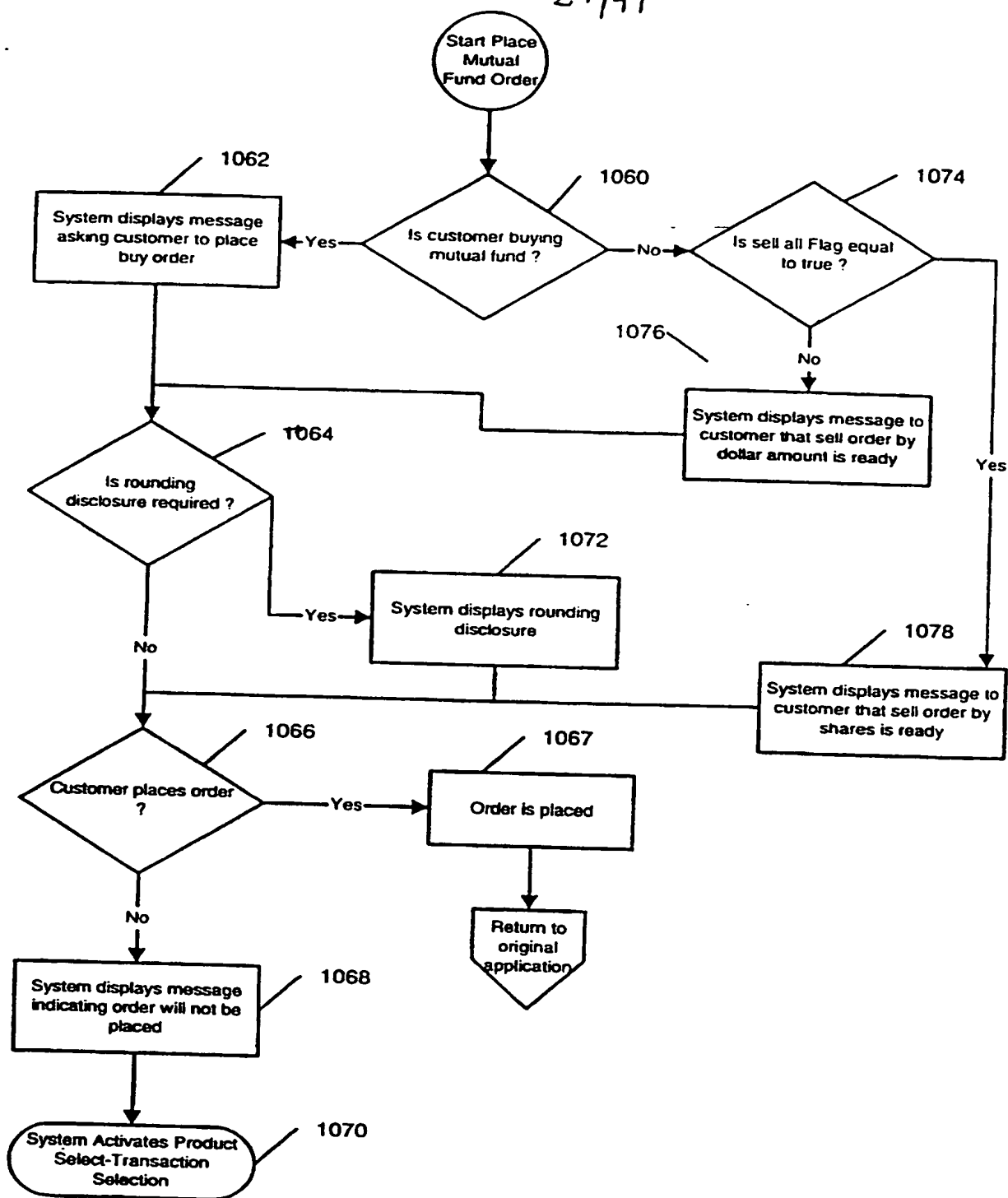


FIG. 21

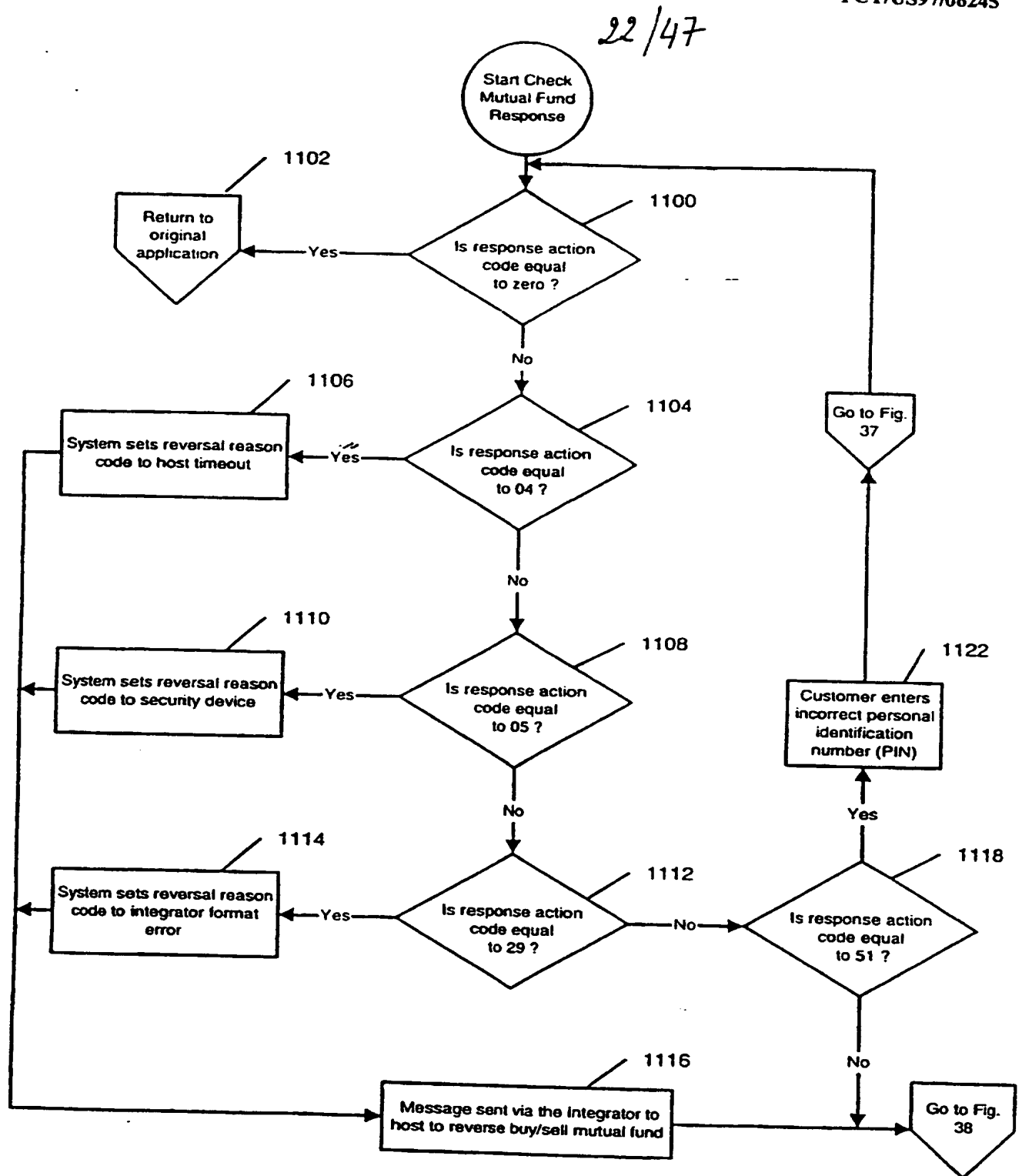


FIG. 22

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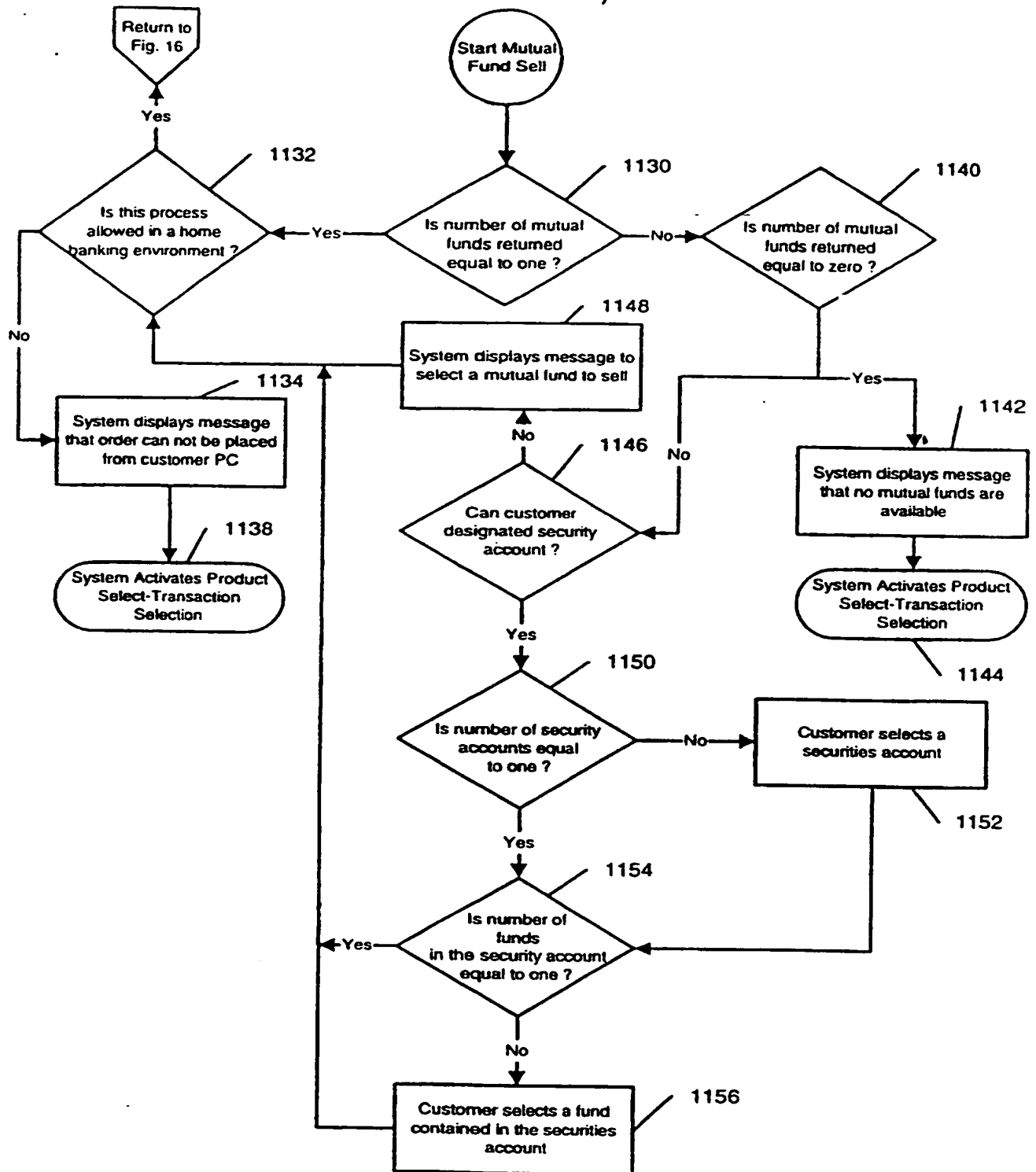


FIG. 23

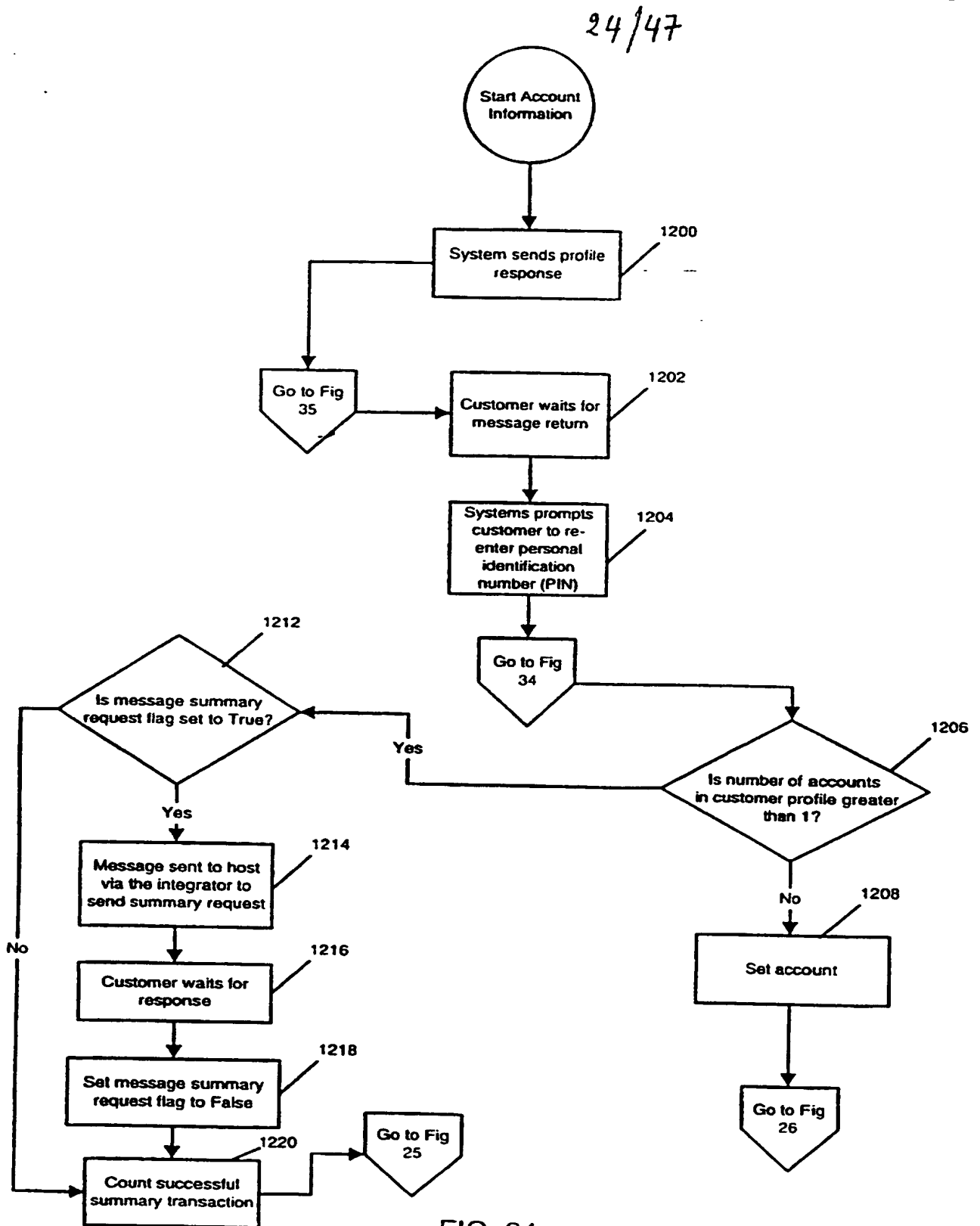


FIG. 24

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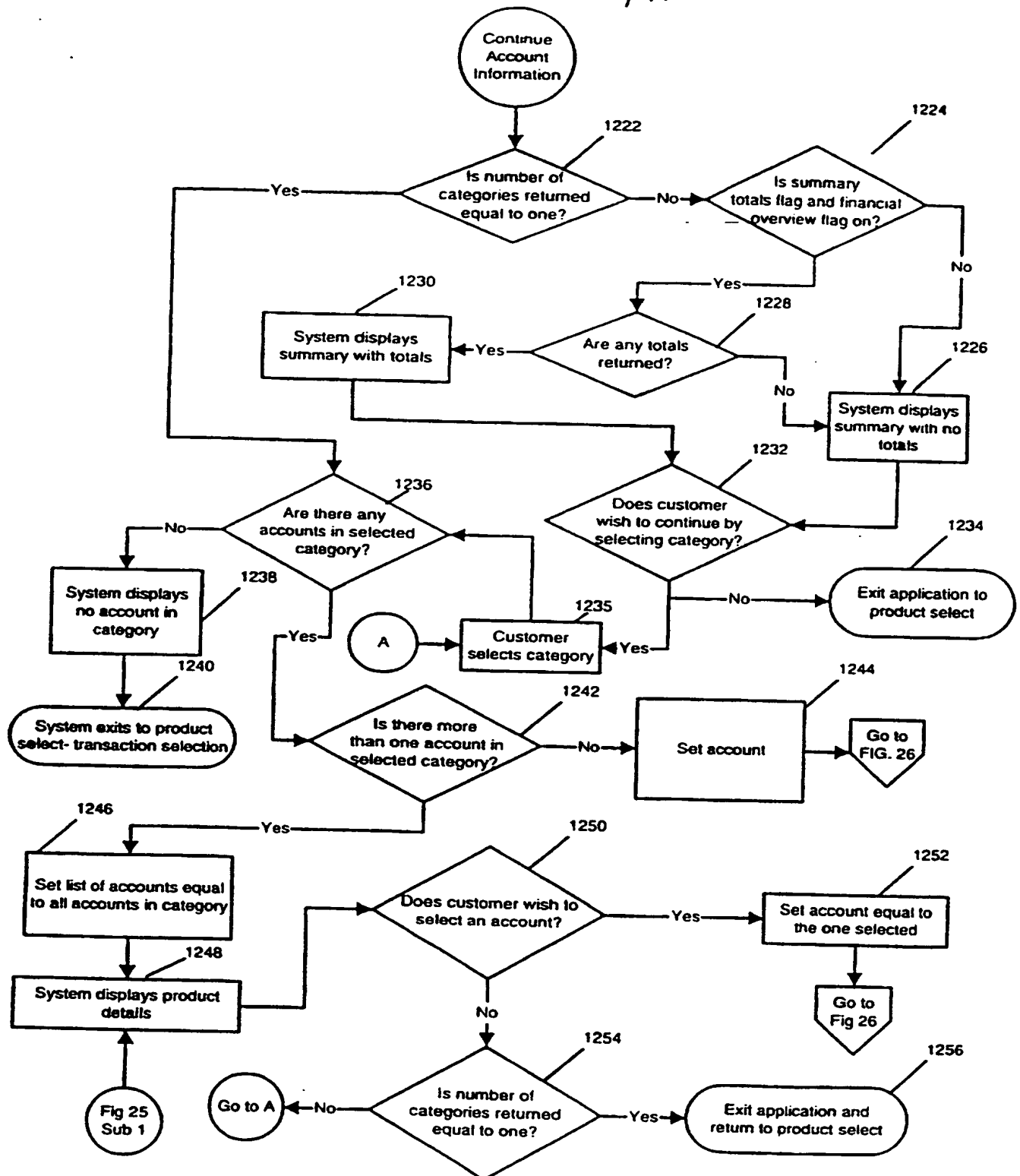


FIG. 25

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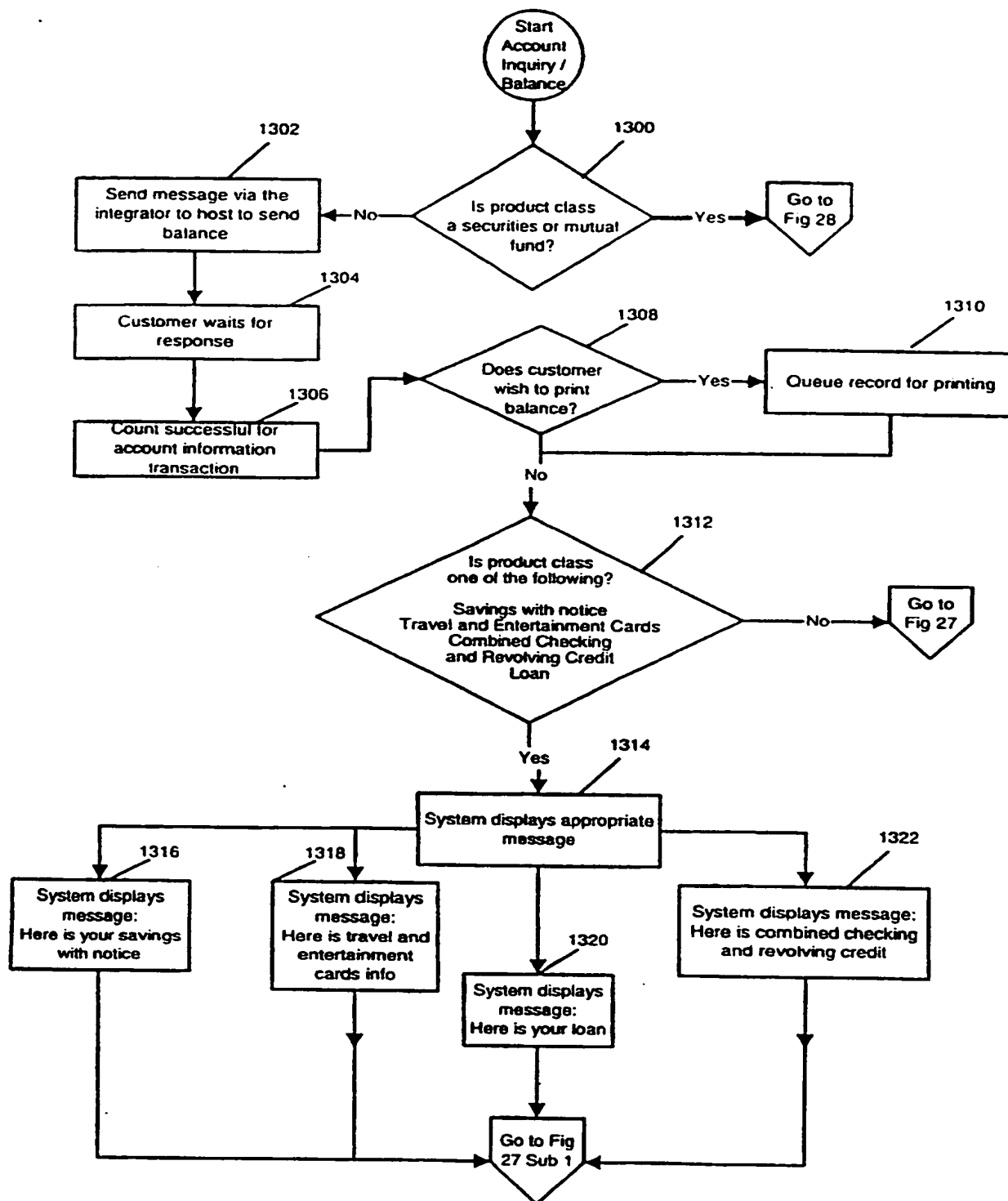


FIG. 26

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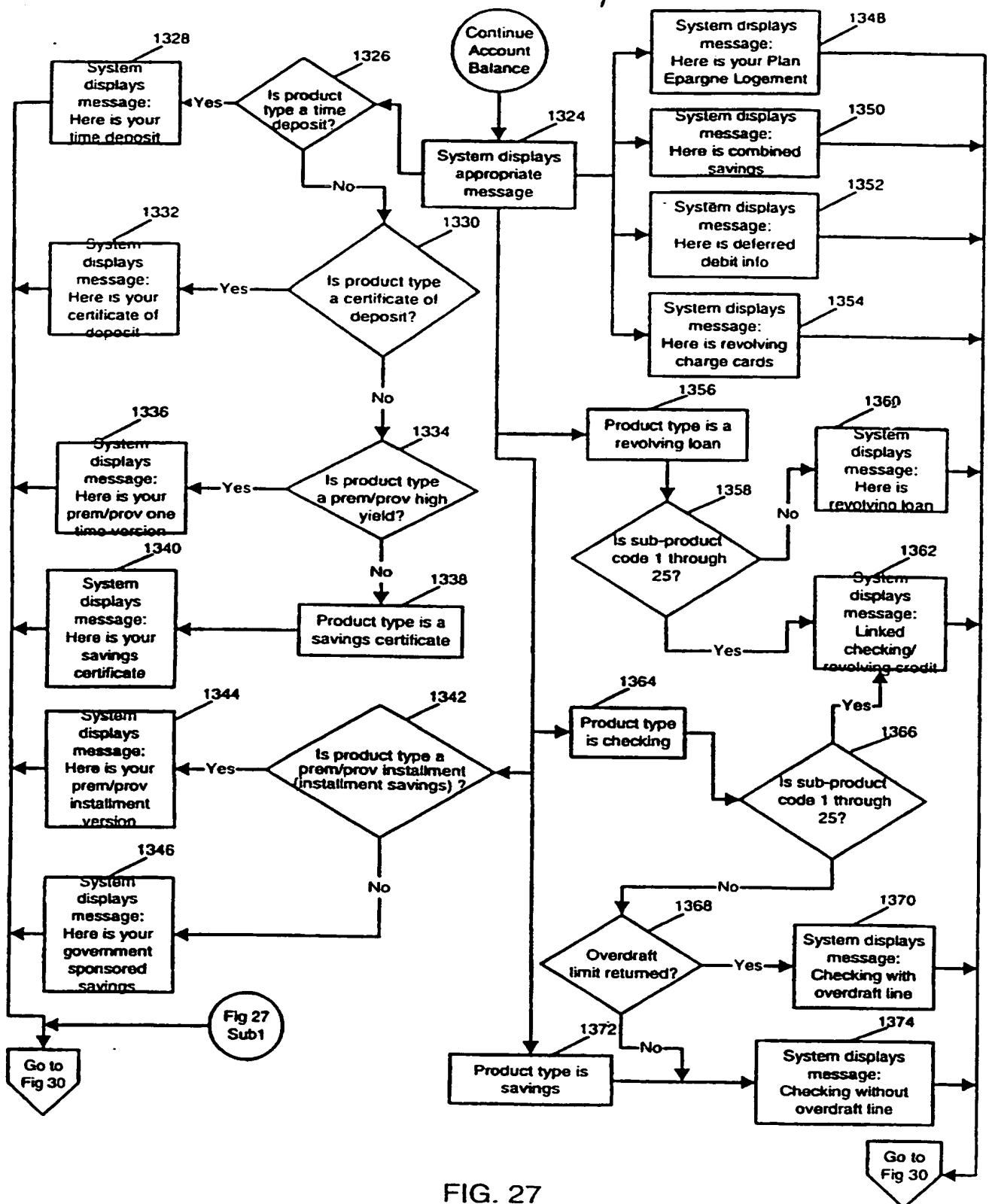


FIG. 27

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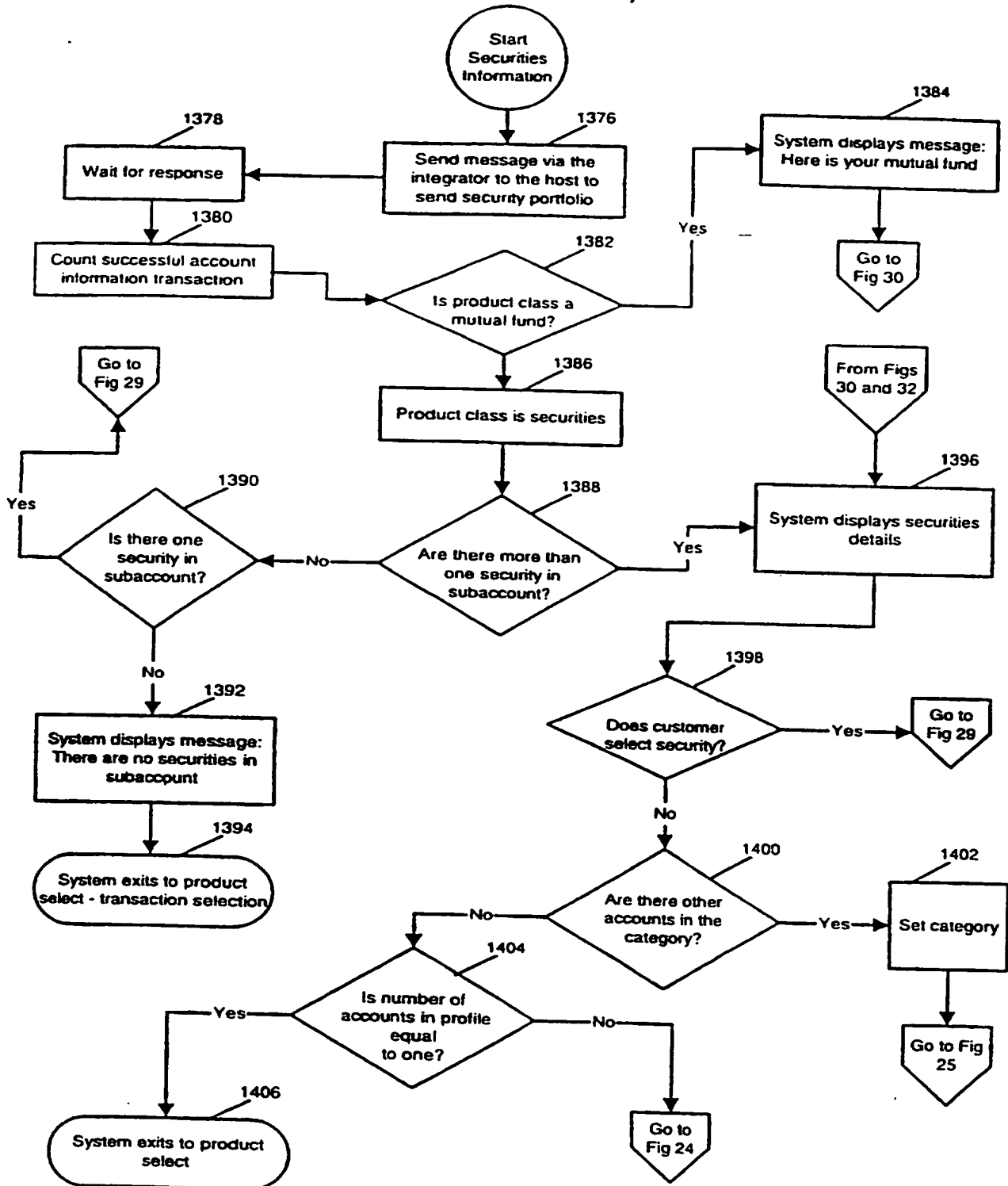
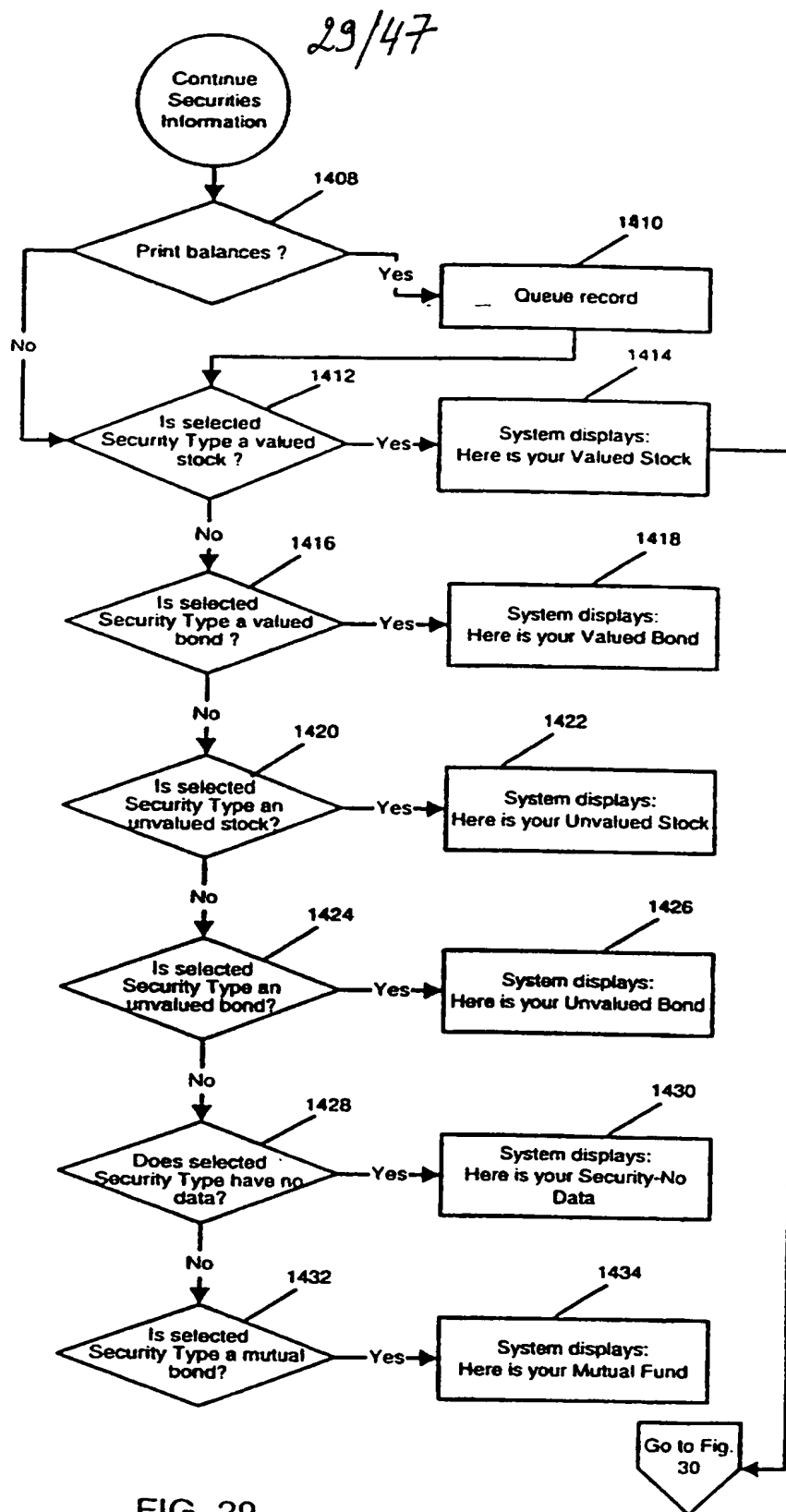


FIG. 28



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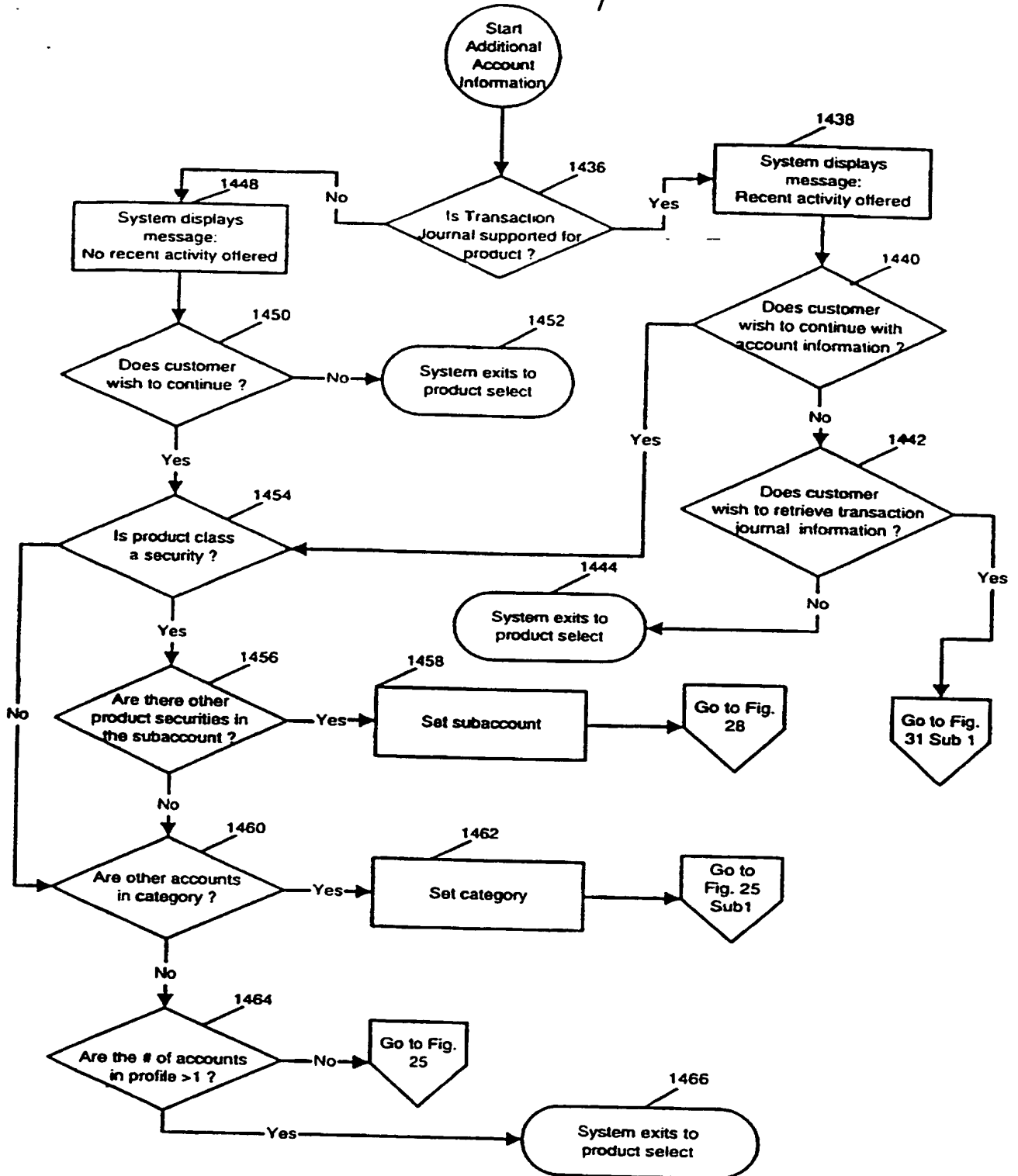


FIG. 30

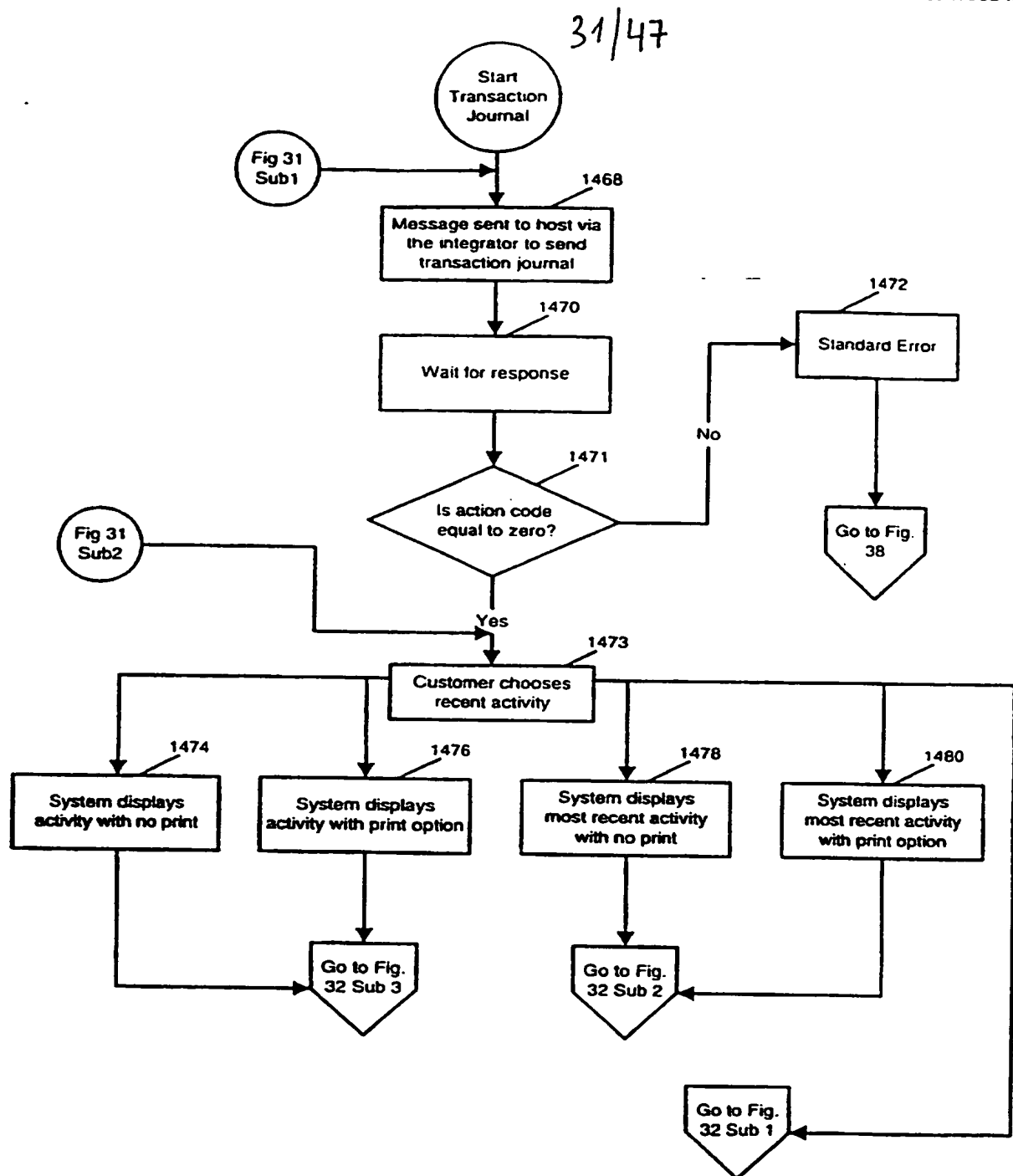


FIG. 31

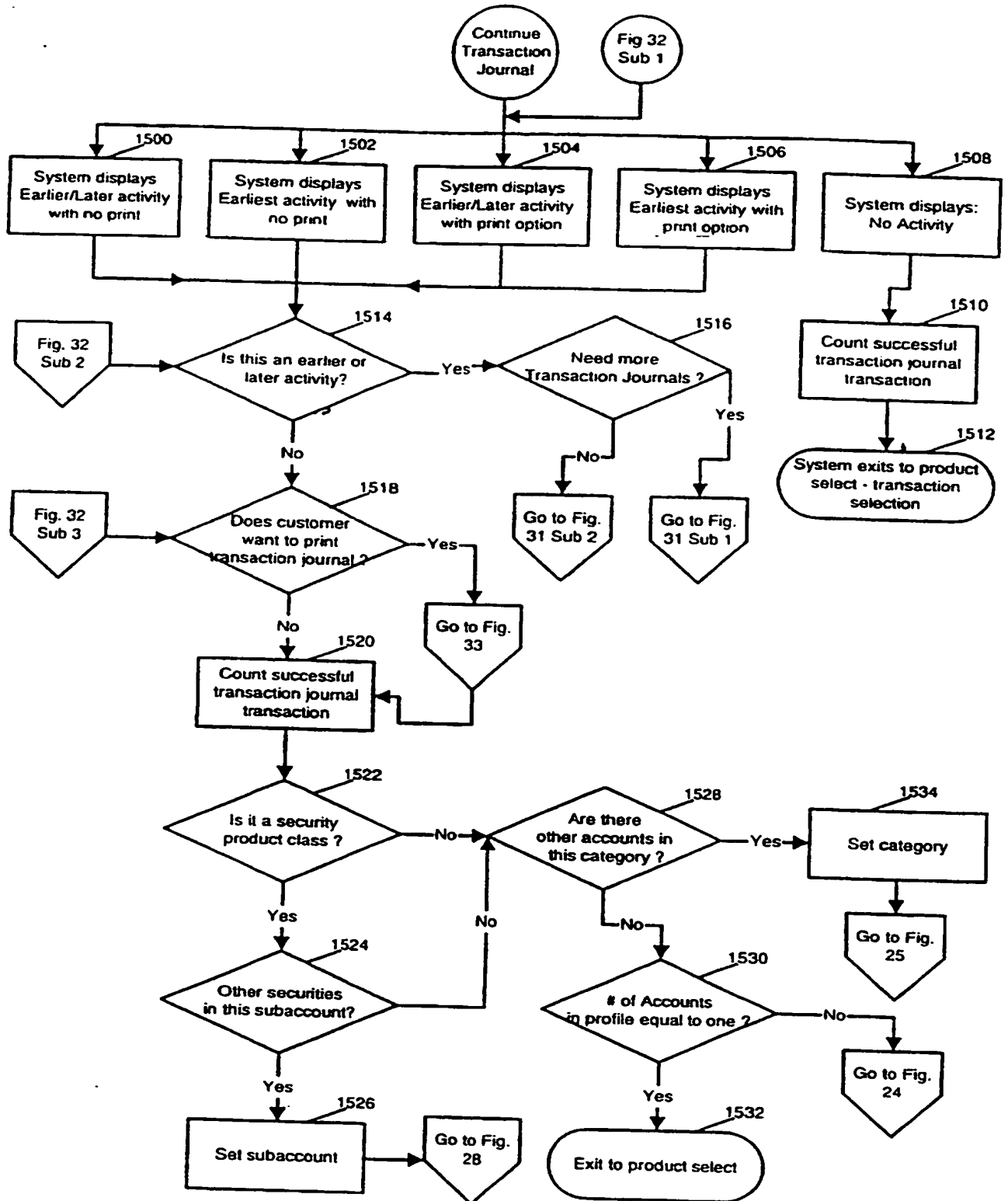


FIG. 32

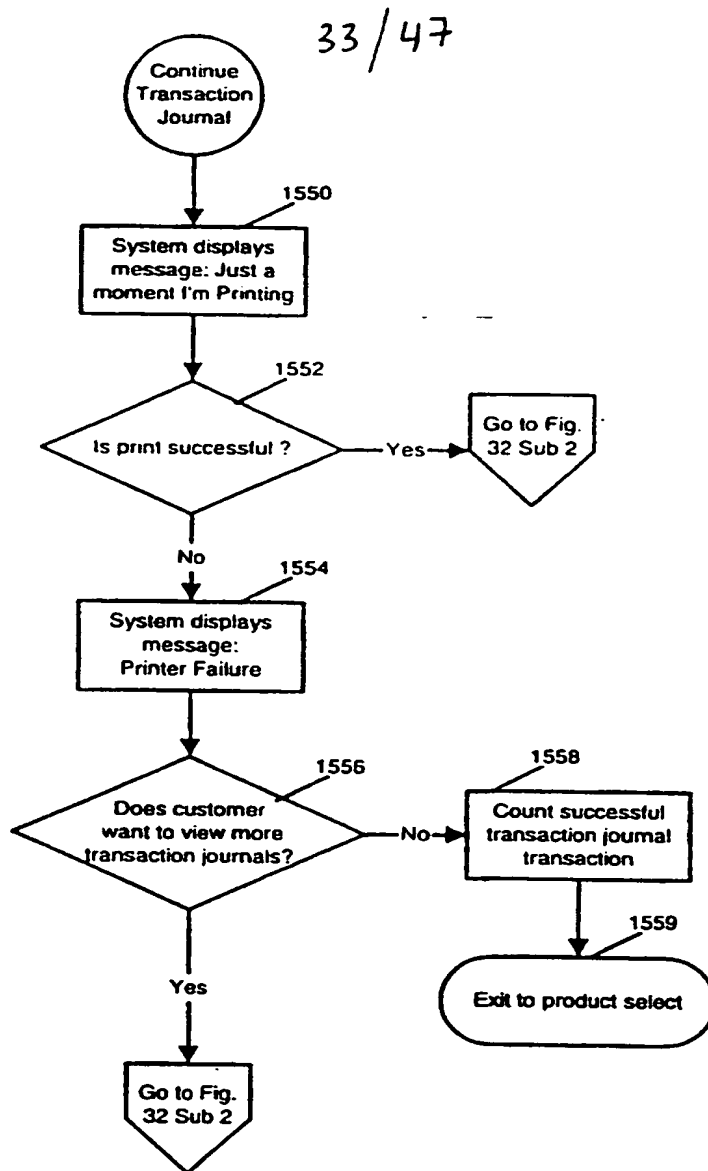


FIG. 33

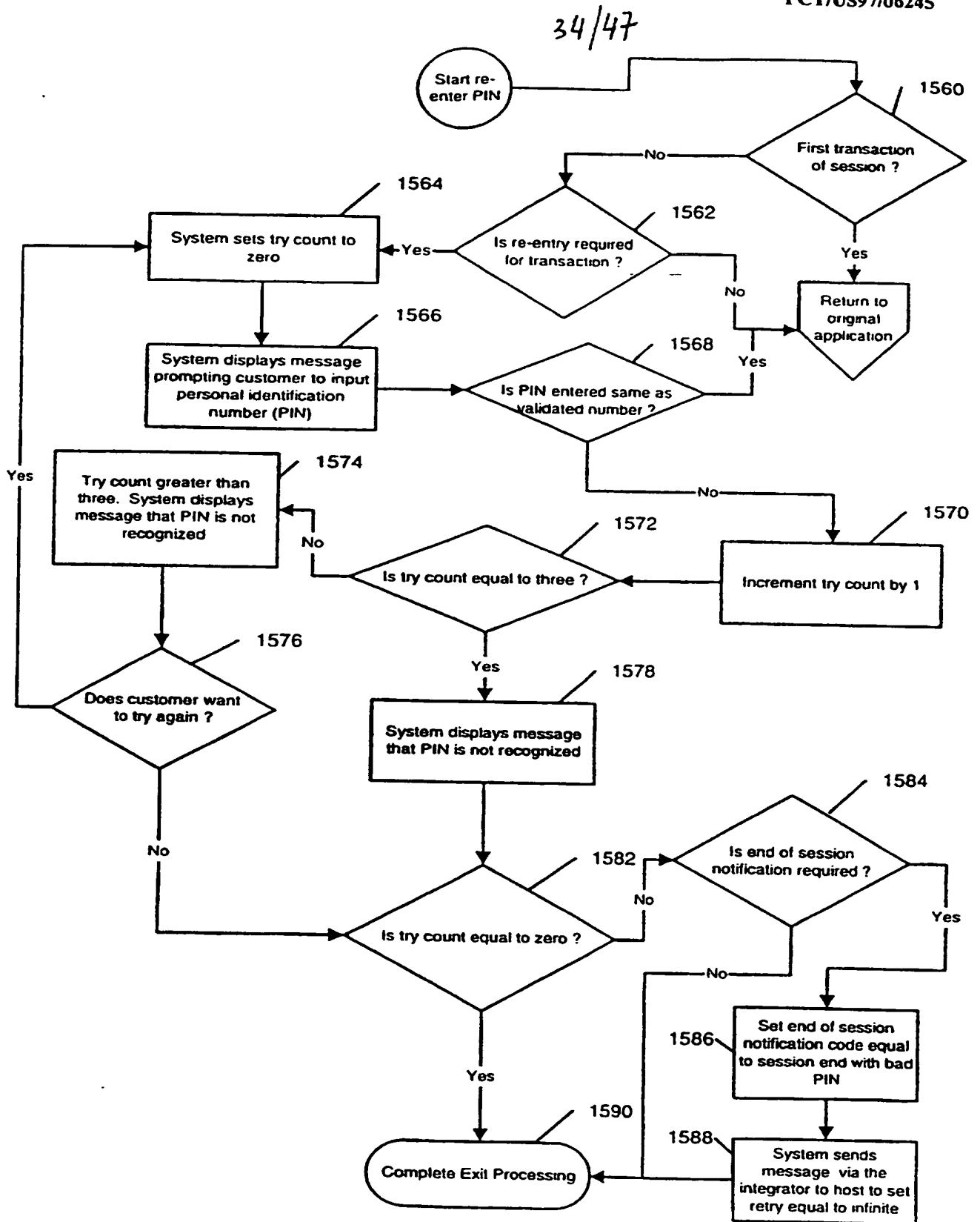


FIG. 34

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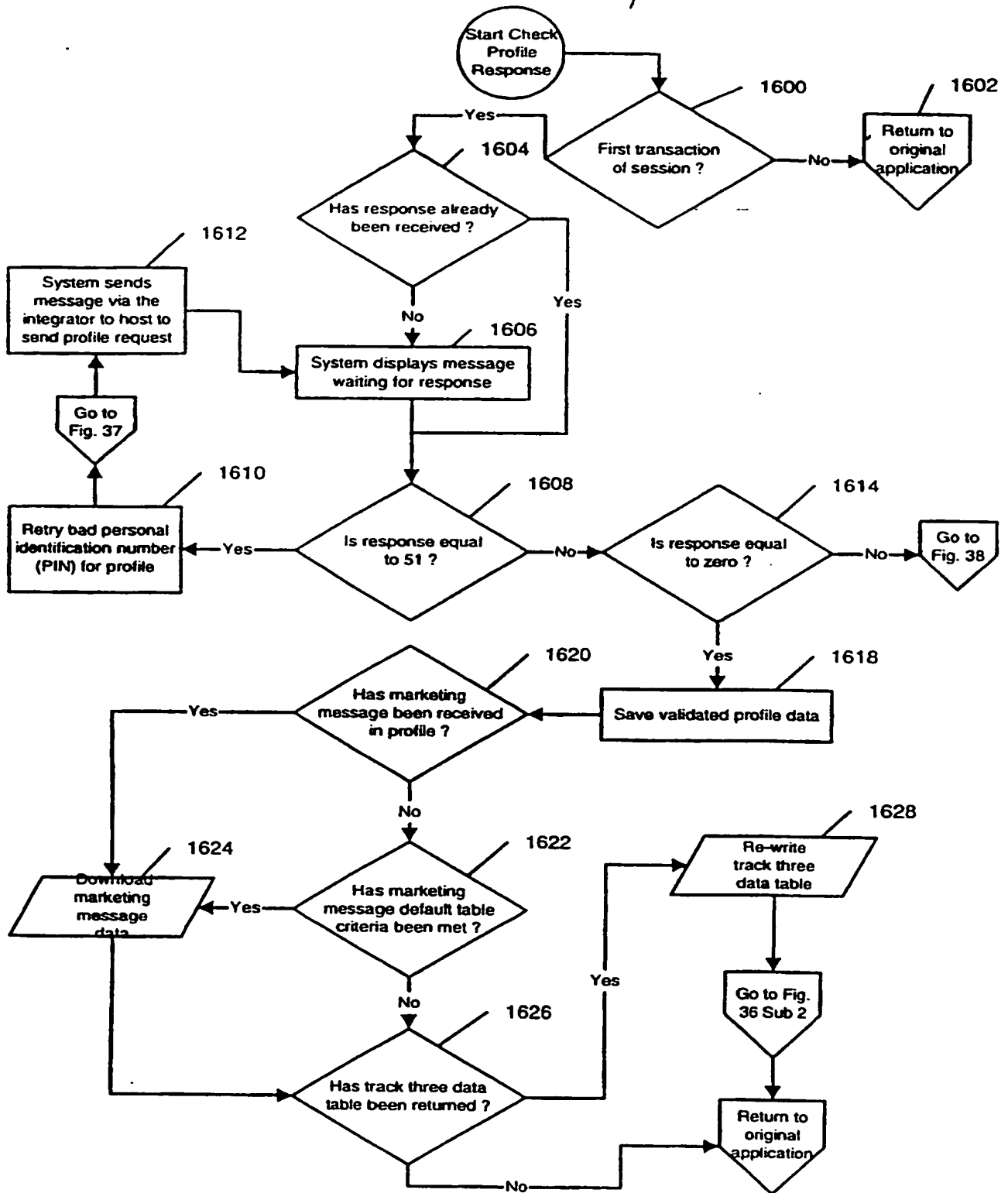


FIG. 35

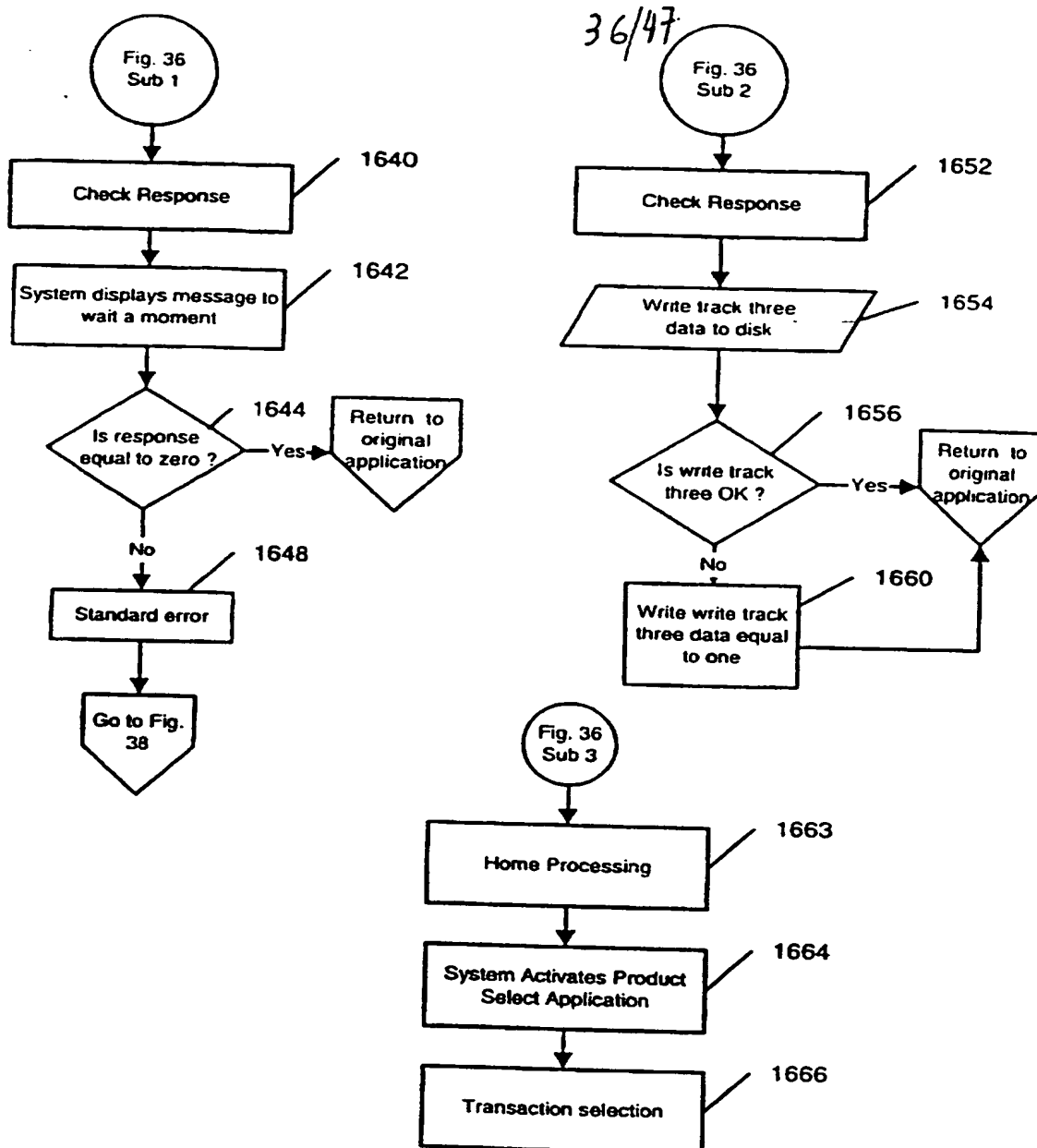


FIG. 36

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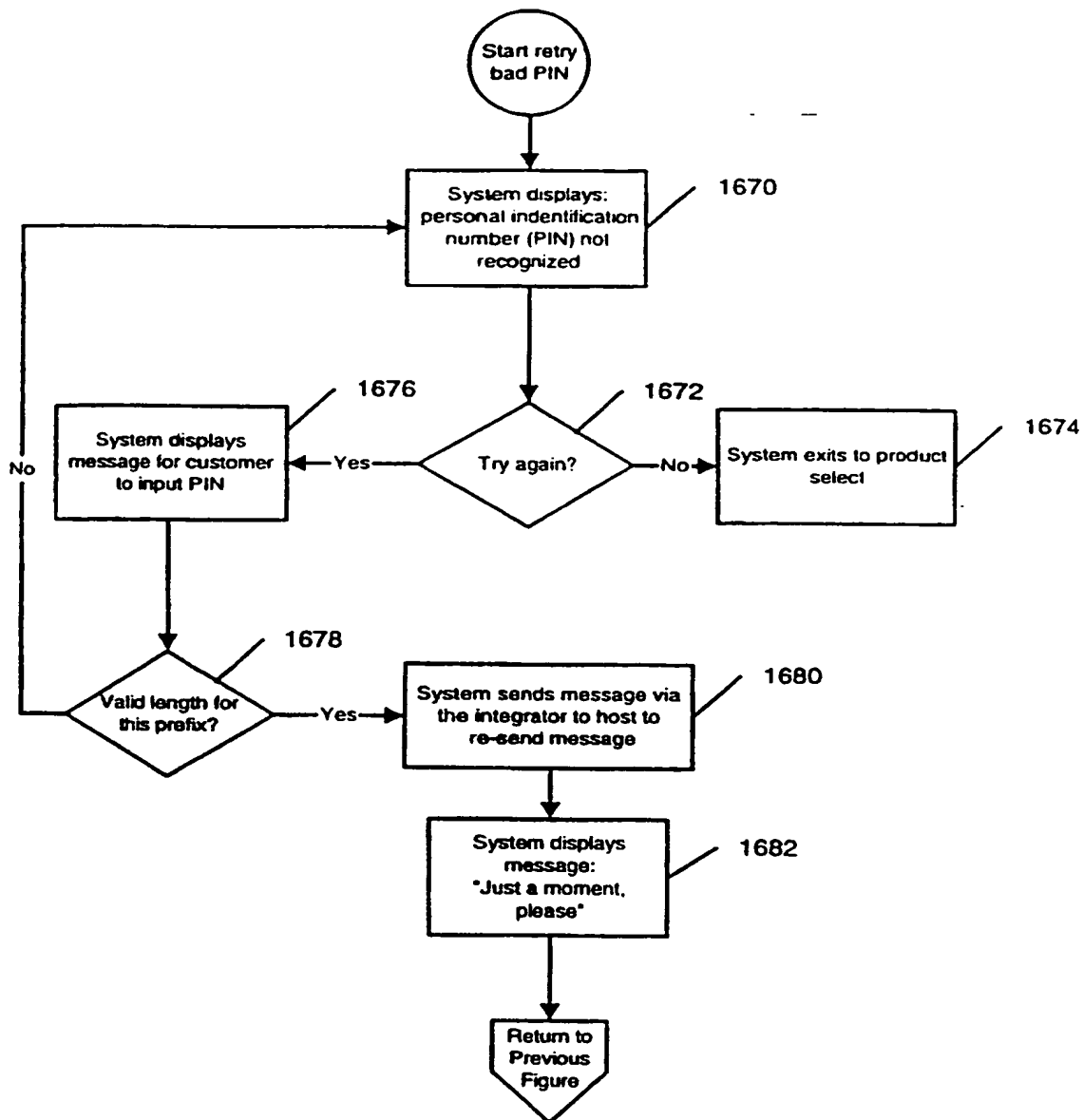


FIG. 37

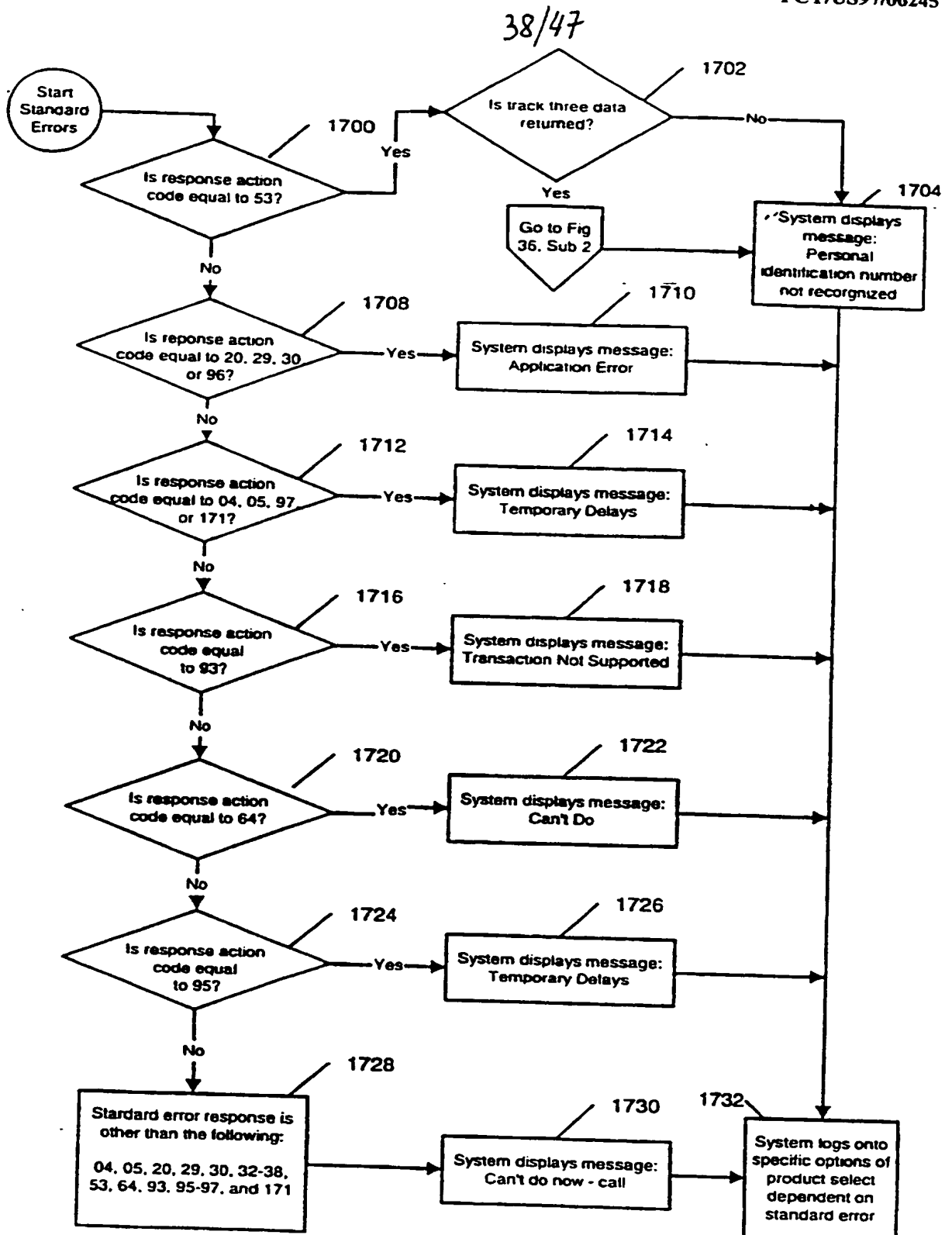


FIG. 38

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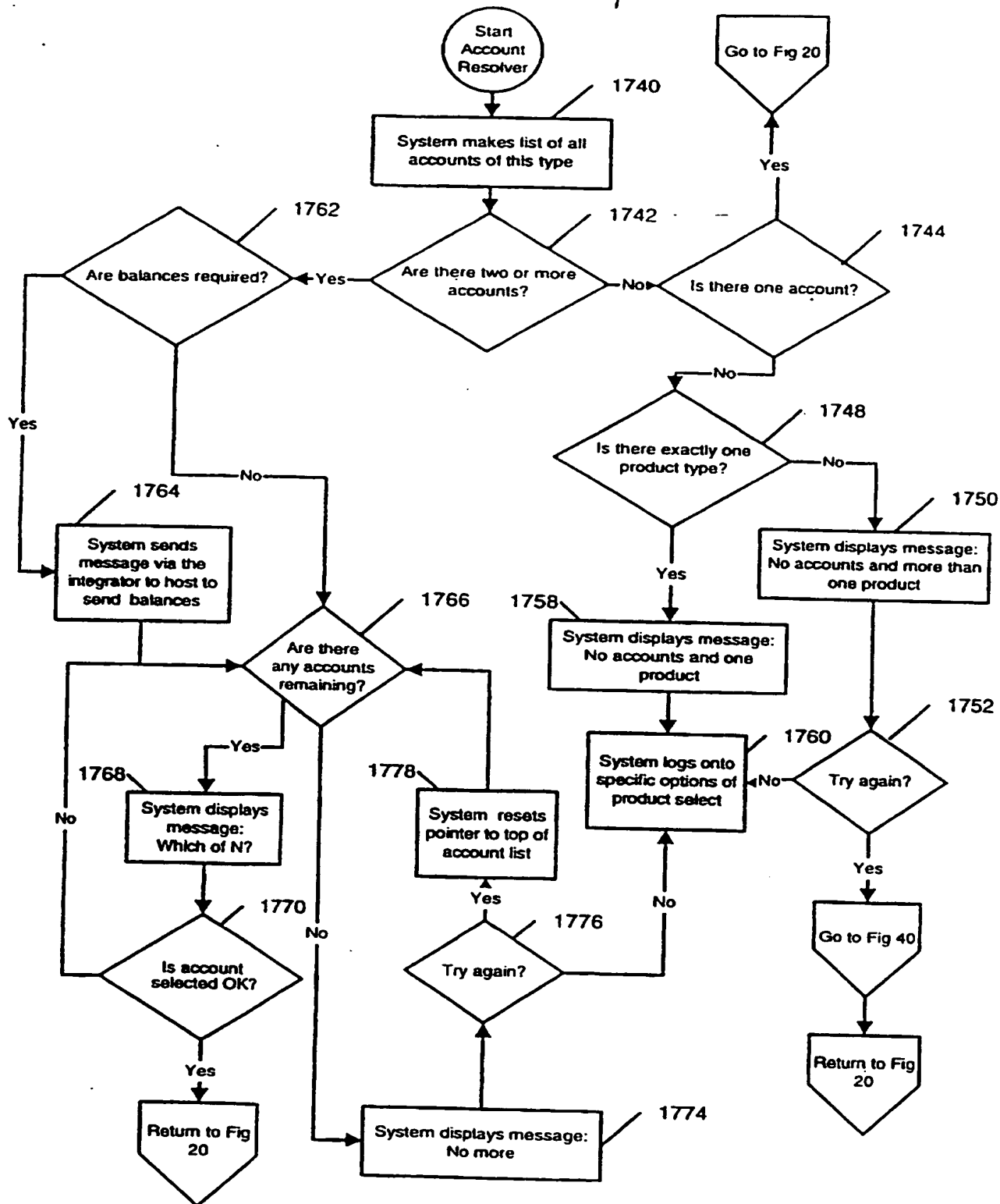


FIG. 39

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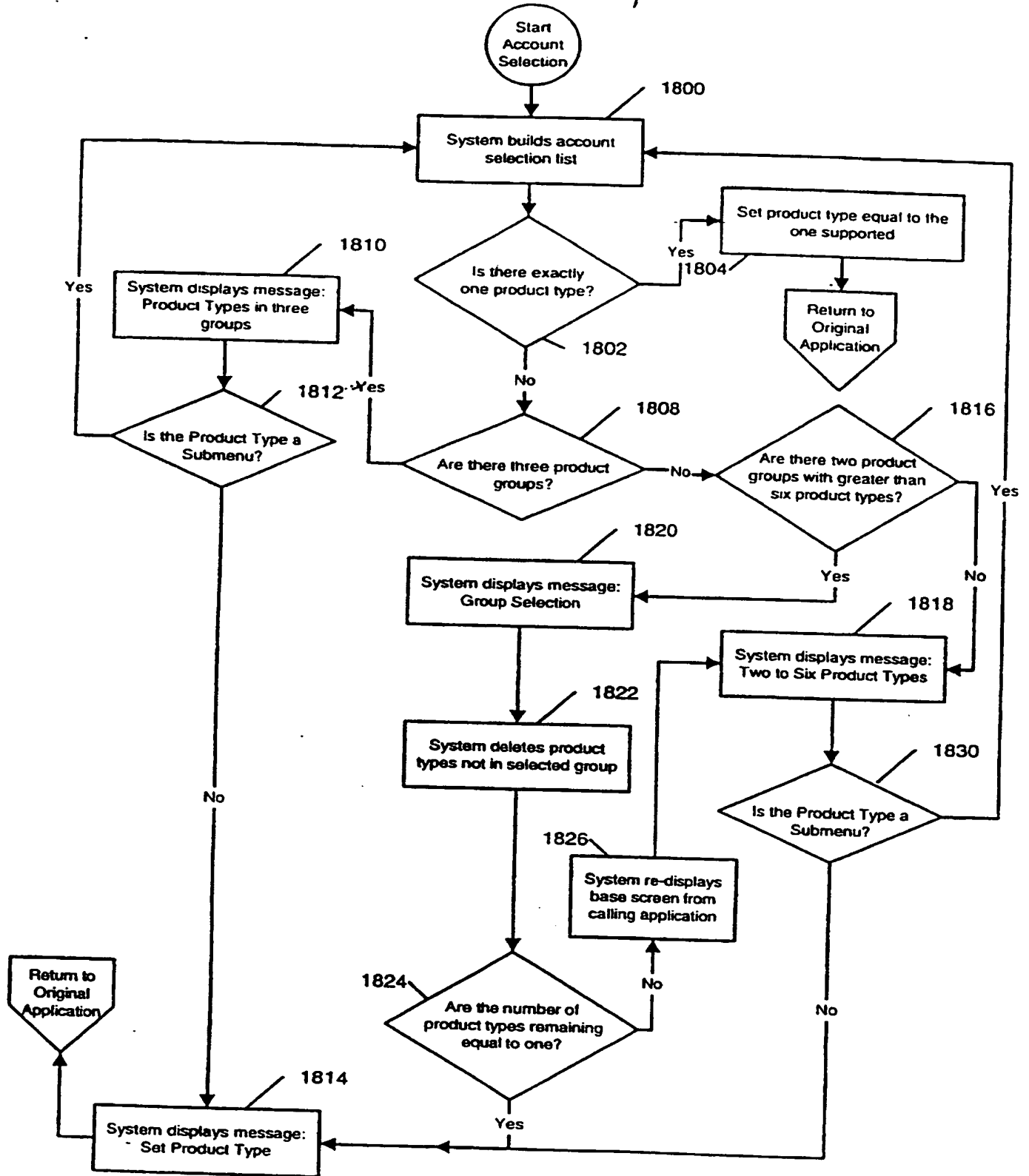


FIG. 40

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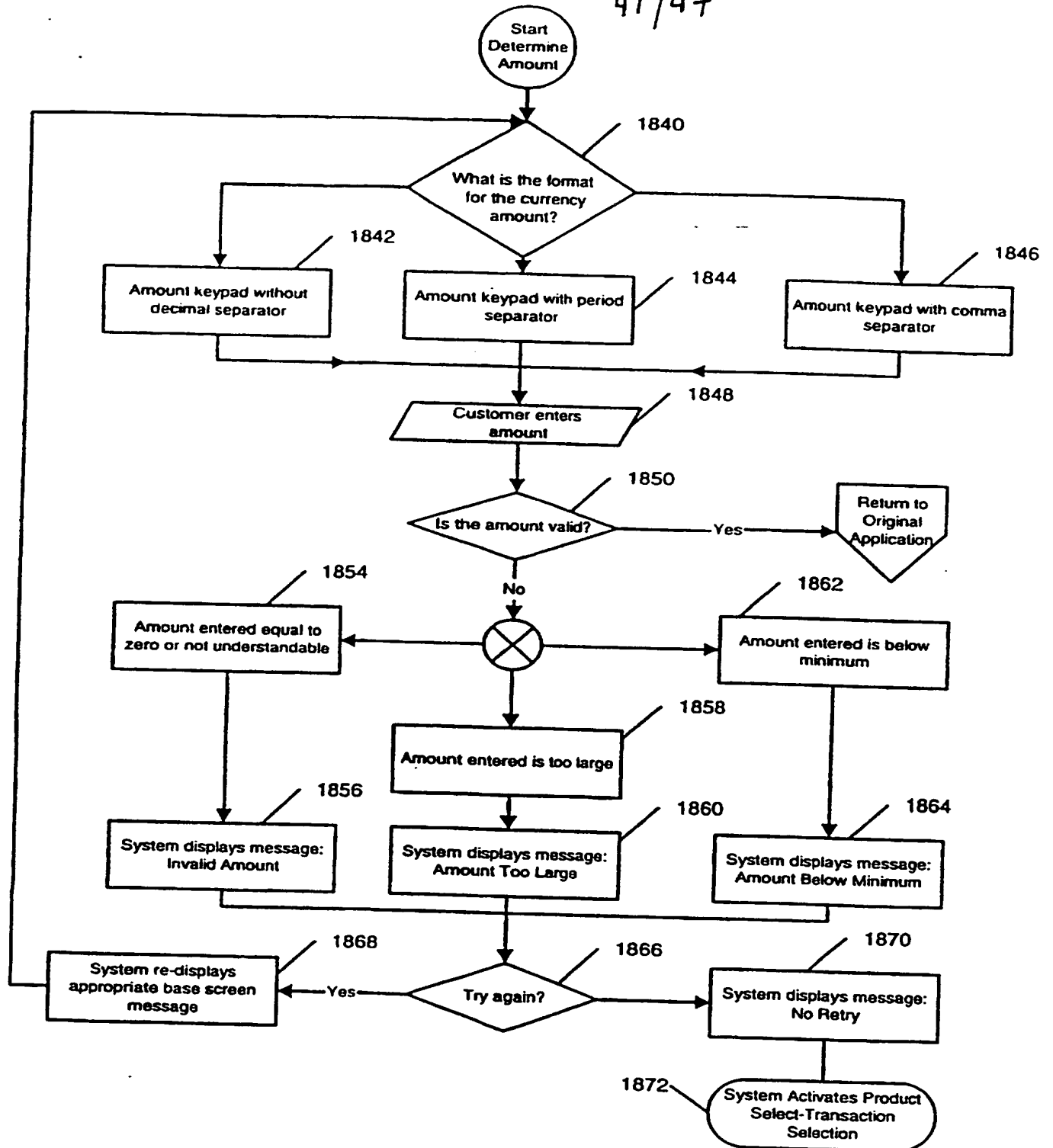


FIG. 41

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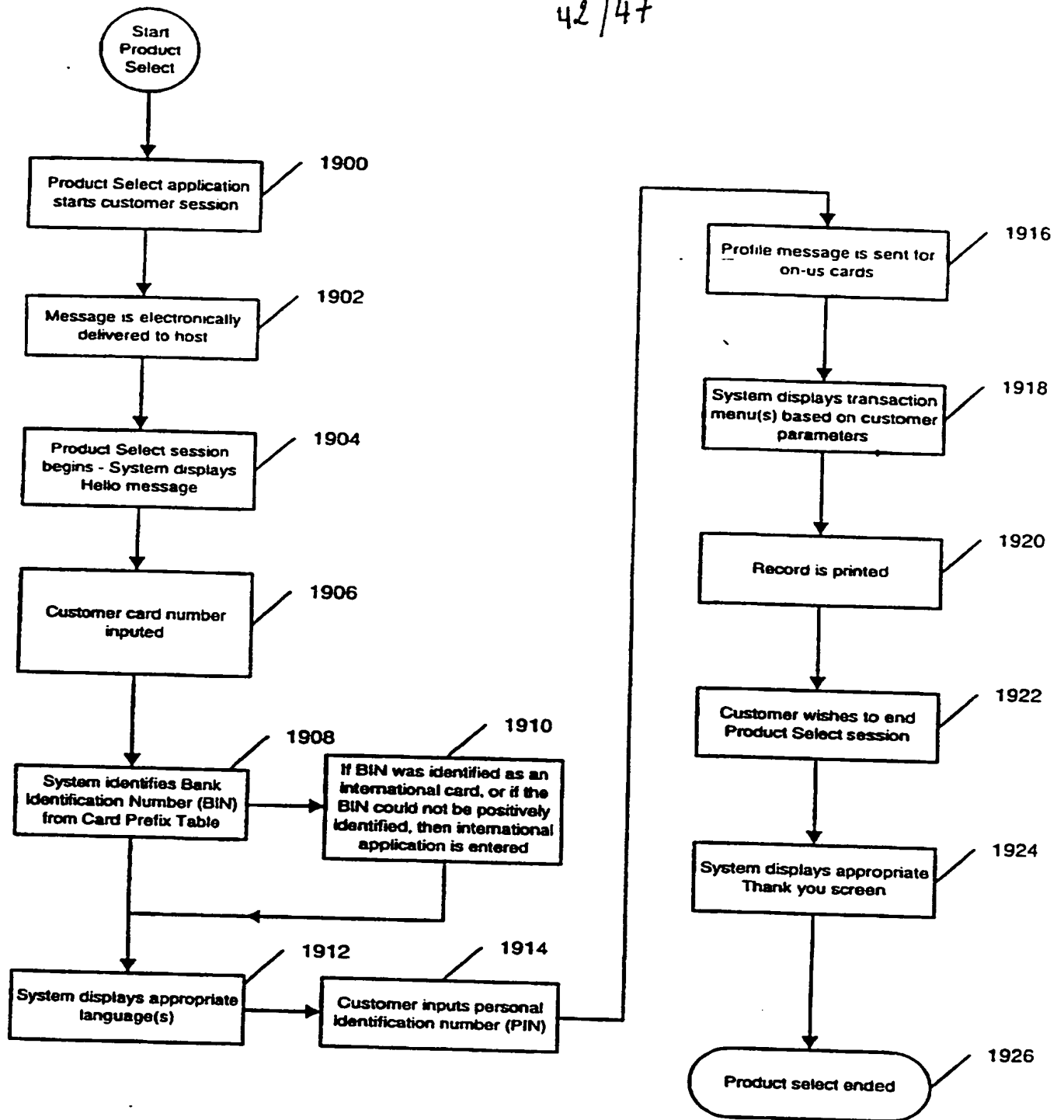


FIG. 42

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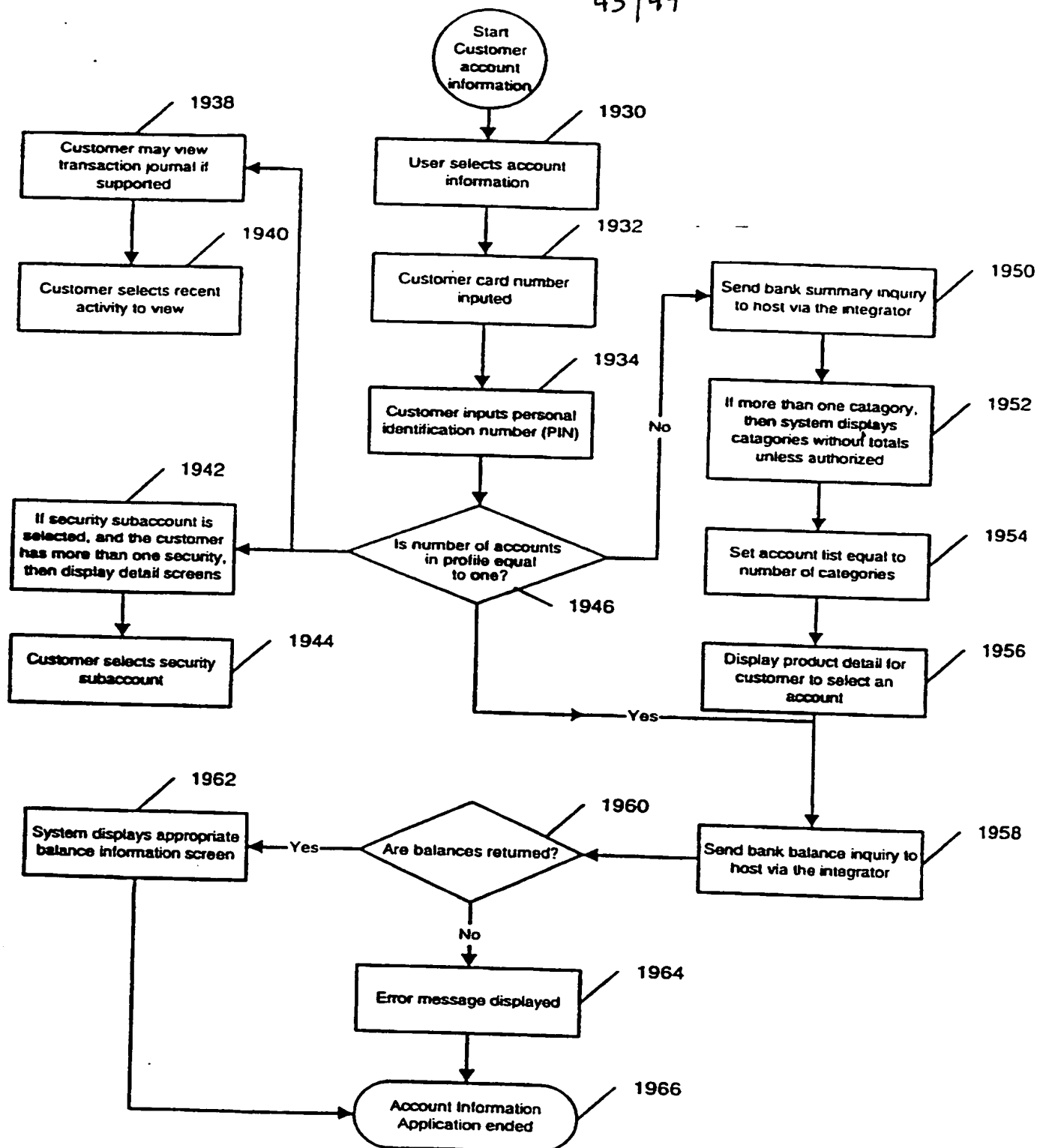


FIG. 43

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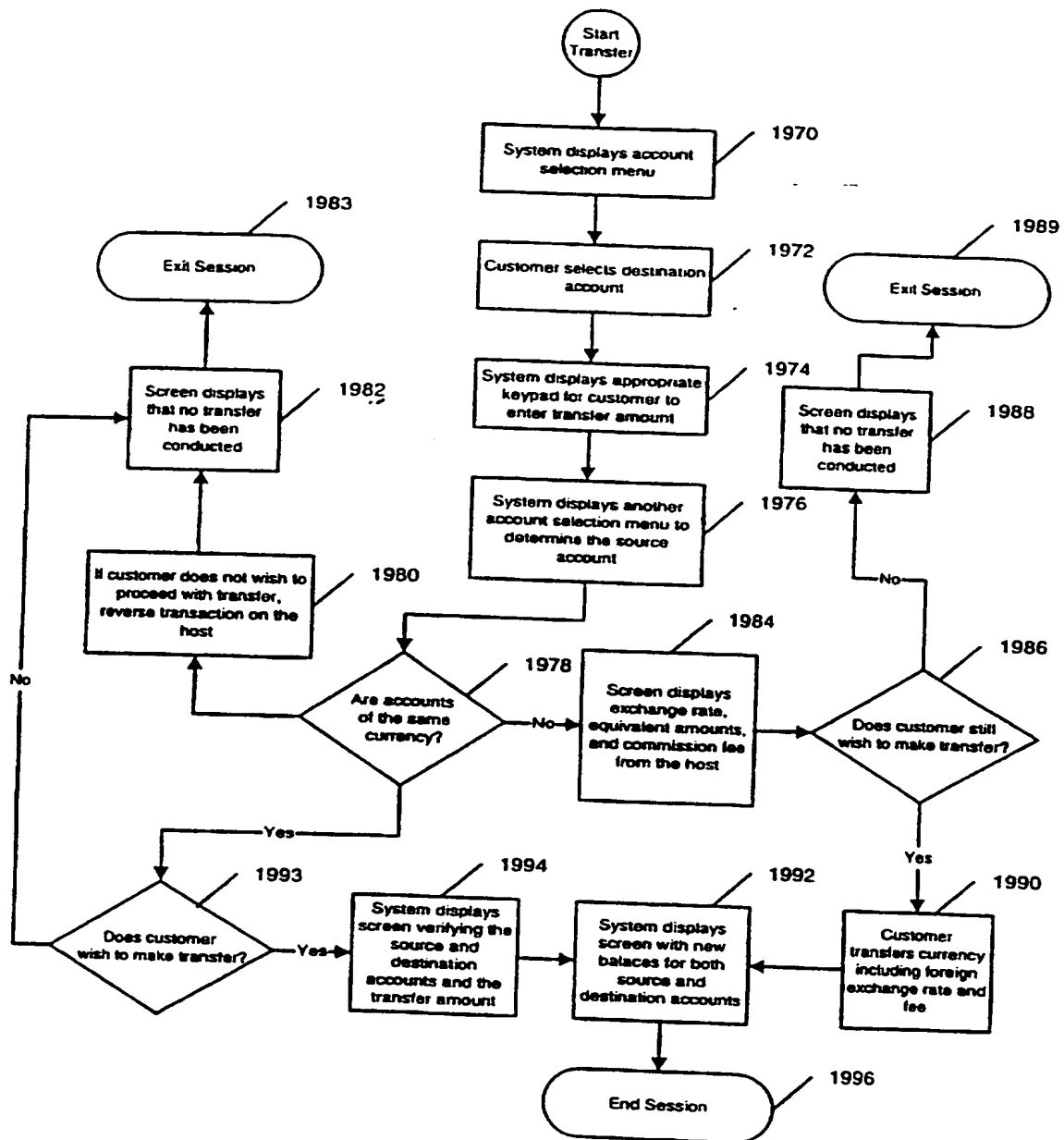


FIG. 44

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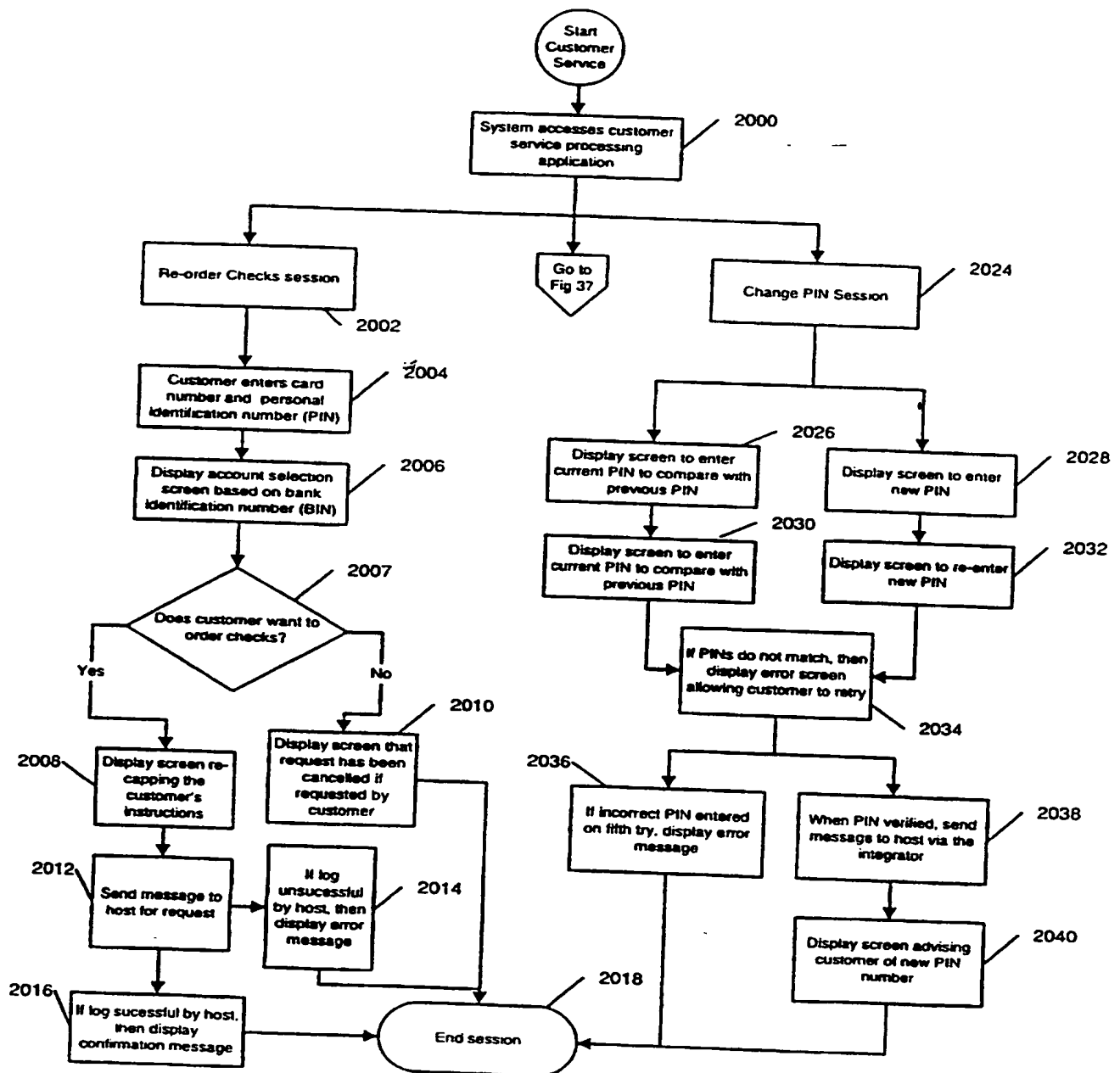


FIG. 45

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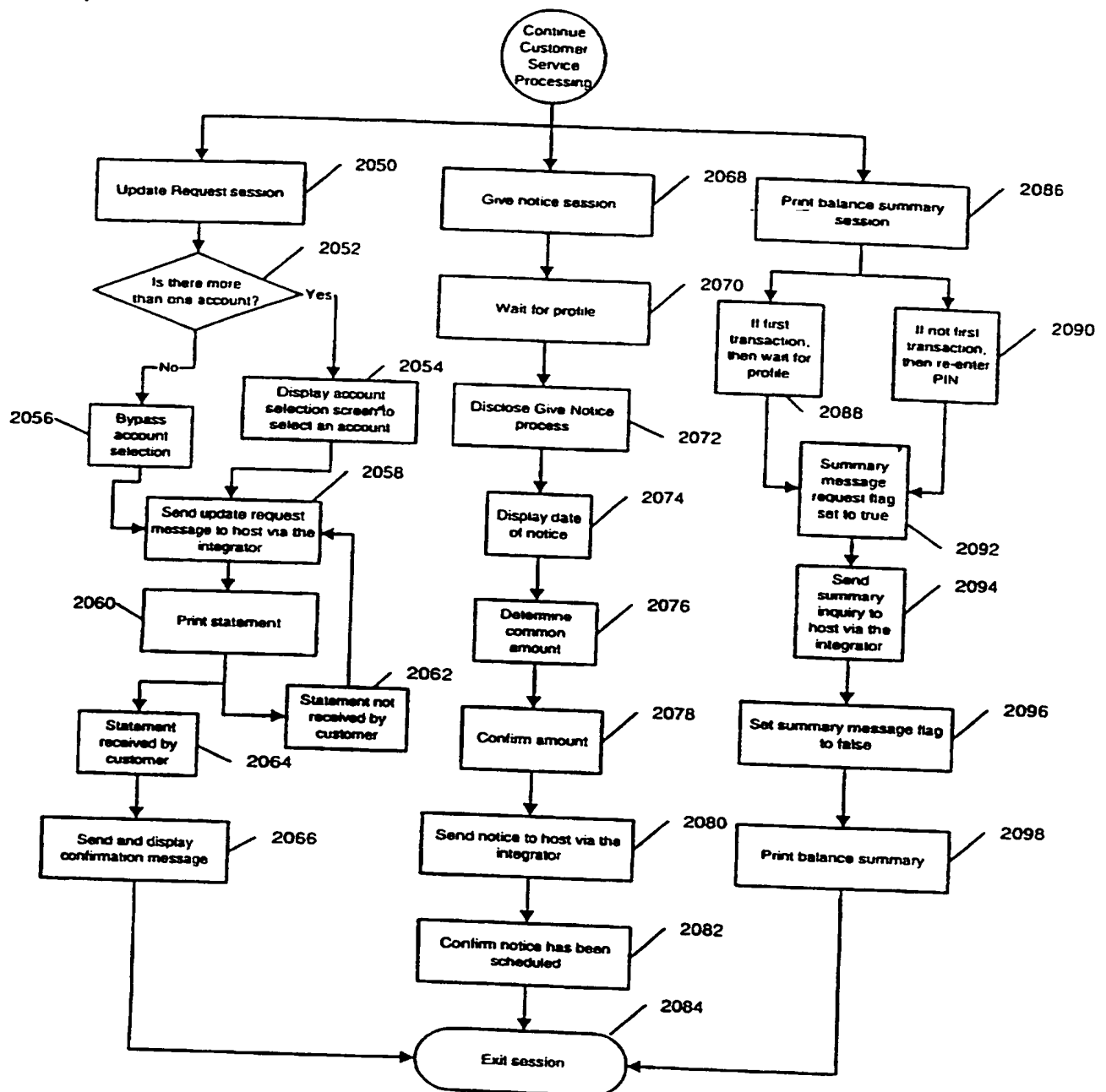


FIG. 46

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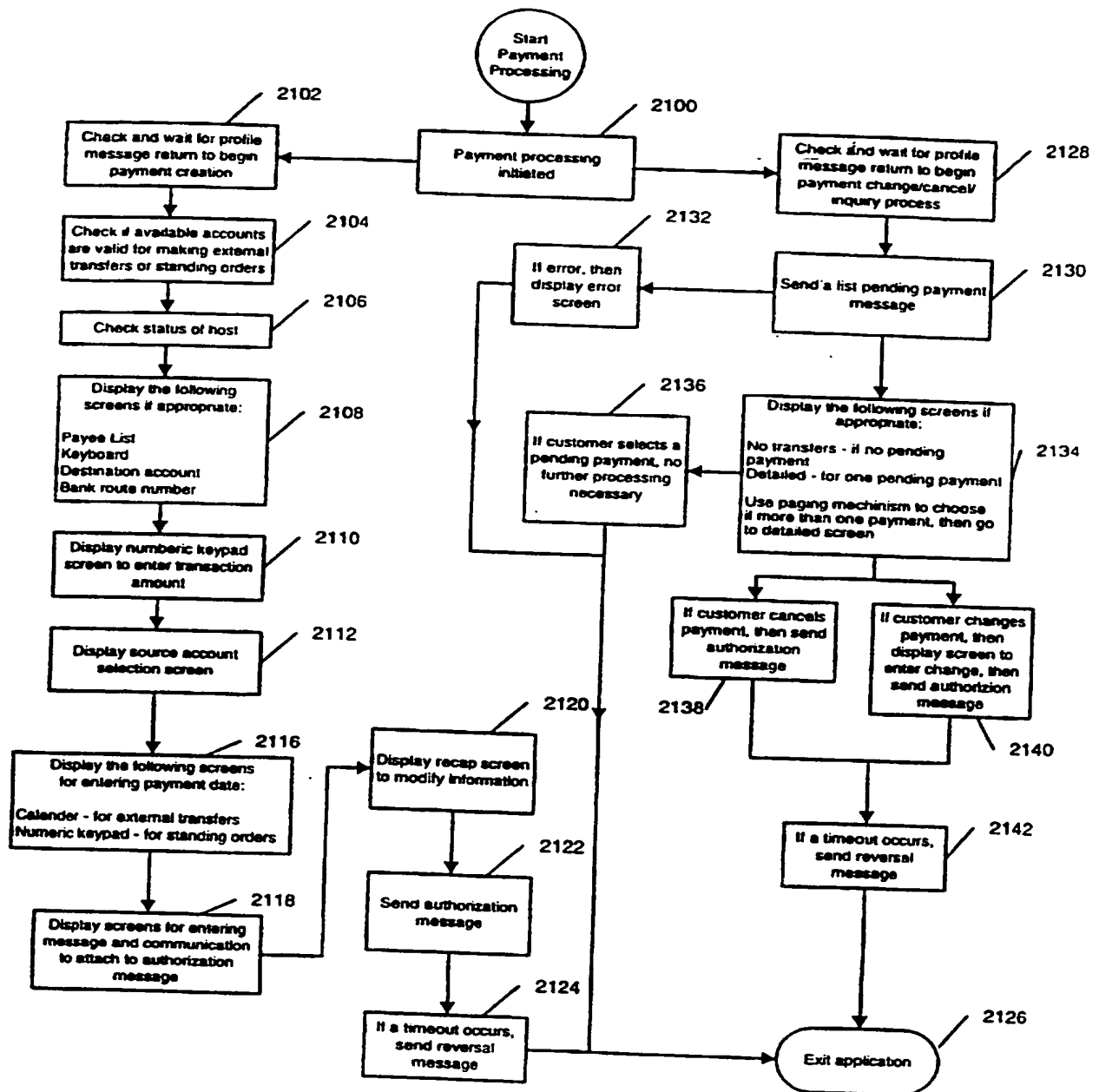


FIG. 47

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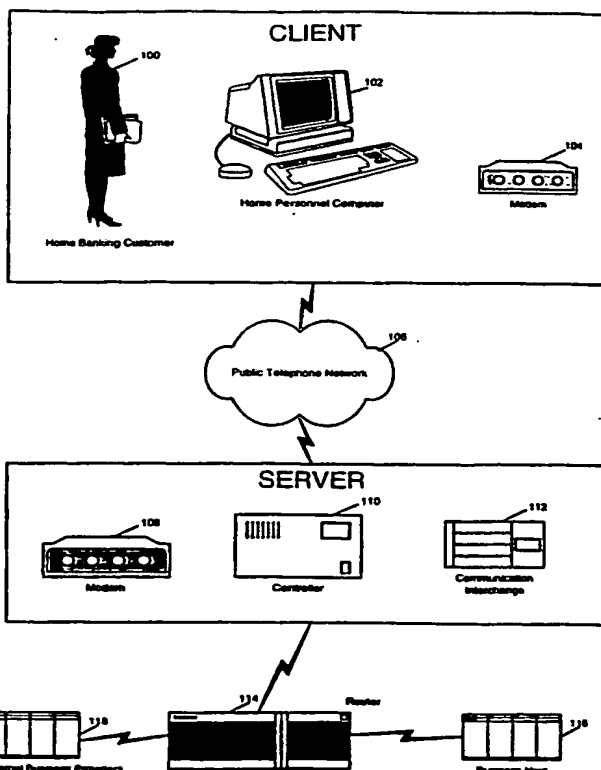
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(54) Title: AN IMPROVED METHOD AND SYSTEM FOR PERFORMING BANKING TRANSACTIONS, INCLUDING HOME BANKING

(57) Abstract

The Home Services Delivery System will provide multi-function financial services, such as Account Information, Transfer, Customer Service, Payment, Payee List, Direct Debit, and Mutual Funds, to a user accessible through a Personal Computer System (102). It is based on a Client-Server architecture and runs under the Microsoft Windows environment. Client software is provided to the user (100) that runs on the user's PC (102). This software accesses a Home Services Delivery System Server (110) via a dial-up line (104, 106, 108) and provides the basic functions needed to connect to the Server (110), authenticate the user (100), and maintain the connection until the user (100) concludes it. During installation, the Client software can be configured for use with a preferred language, and it will interface with the System using that preferred language in subsequent sessions. The System Server (110) is connected to at least one business host (116) and other external service providers (118). The Home Services Delivery System Server supports encryption key downloading, personal identification number (PIN), and PIN encryption.



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INTERNATIONAL SEARCH REPORT

International application No.

PCT/US97/06245

A. CLASSIFICATION OF SUBJECT MATTER

IPC(6) : G06F 17/00

US CL : 395/242

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

U.S. : 395/242, 221, 226, 227

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

Please See Extra Sheet.

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 5,220,501 (LAWLOR et al) 15 June 1993	1,2,4,6,7, 11,18,20, 24-26,30, 33,36,37, 42,47,49, 53-55
Y	US 5,025,373 (KEYSER, JR. et al) 18 June 1991	1,2,4,6,7, 11,18,20, 21,24-26, 30,31,33, 36,37,42, 47,49, 53-55
Y	SANDBERG, JARED. American Express Goes on-line For Card Holders. January 30, 1995, sec A, p 3.	2,18,20, 21,24,25,

☒ Further documents are listed in the continuation of Box C.
 ☐ See patent family annex.

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Date of the actual completion of the international search

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INTERNATIONAL SEARCH REPORT

International application No.
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C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	COURTER, EILEEN. PC Banking: Ready for Takeoff. Credit Union Management, October 1995, pp 37-38.	2,18,20, 21,24,25, 31
X	COHEN, JACKIE. Home banking lite. Bank Technology News, v9,n4, pp. 18-21.	1,4,6,7,9, 13,15-19, 21,24-26, 29,30,33, 42,44-50, 53-55
X	SUBRIZI AND FAUST. The Virtual ATM: Beyond the current system. Bank Marketing. Nov. 94, v.26, is.11, pp. 17-20, especially page 19.	2,3,5

Form PCT/ISA/210 (continuation of second sheet)(July 1992)*

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US97/06245

B. FIELDS SEARCHED

Electronic data bases consulted (Name of data base and where practicable terms used):

APS, WALL STREET JOURNAL, BUSINESS AND GENERAL PERIODICALS

home banking, pc banking, remote banking

DIALOG search of home or remote banking and ATM GUI emobidments thereof

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